57

35 cents per copy

ROCKS and MINERALS

Vol. 7. No. 3. SEPTEMBER, 1932 Whole No. 25

Courtesy of Fred W. Schmeltz.

AN OLD PLACER WORKINGS IN OREGON

Due to the depression many old placers are now being reworked.

Featured in This Issue:

A NON-TECHNICAL MAGAZINE

—ON—

MINING - PROSPECTING - GEOLOGY - MINERALOGY

THE BULLETIN BOARD

We Want Your Vote!

Your friends, relatives, children—see that they vote in the National Rock and Mineral Contest. Every ballot counts.

HOW THE CONTEST STANDS TO DATE

(As of July 20th)

ROCKS		MINERALS	
Granite	16,161	Gold	21,925
Marble	10,835	Quartz	8,305
Serpentine	5,673	Garnet	2,912
Coal	2,757	Hematite	1,464
Limestone	1,250	Mica	988
Conglomerate	525	Pyrite	735
Gneiss	514	Chalcopyrite	542
Sandstone	498	Galena	539
Schist	222	Calcite	510
Slate	202	Limonite	281
Shale	161	Sphalerite	140
Miscellaneous	104	Miscellaneous	561
Total votes cast	38,902	Total votes cast	38,902

Interested readers can obtain ballots for distribution among friends. Write to the Contest Editor and state the number wanted.

Contest will close December 31st, of the present year.

COMING

A Special Opal Number

The December issue will be devoted to one of nature's most beautiful products—Opal. Be sure and have your copy reserved.

Boodle Lane, well known dealer in minerals, proprietor of Boodle's Mineral Specimens, Galena, Kansas, and one of our valued advertisers, had been sick for over seven weeks during the past summer and this accounts for the delays in filling orders. We are pleased to announce Mr. Lane is now enjoying good health and orders will be given as careful attentio and speedily filled as in the past.

Post card size copies of the group picture taken at the outing (see page 83, this issue) may be had at 10c each. Apply direct to Fred W. Schmeltz, Director of Outings, 2510 Maclay Ave., New York, N. Y.

WANTED: Correspondents in all parts of the world who will be kind enough to send us notes and news items on minerals, etc., that they think may be interesting to the subscribers of ROCKS AND MINERALS. Such as are available we shall be very glad to print in the magazine.

ROCKS and MINERALS

A NON-TECHNICAL MAGAZINE
—ON—
MINING—PROSPECTING—GEOLOGY—MINERALOGY

Published Quarterly

Founded 1926

Vol. 7 No. 3

Whole Number 25

Contents for September, 1932

Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y., under the Act of March 3, 1879

Specially written articles (as Contributions) are desired.

Subscription price $1.00 a year; foreign $1.25. Current numbers, 35c a copy; back number, 40c a copy. No responsibility is assumed for subscriptions paid to agents, and it is best to remit directly to the Publisher.

Issued on the 1st day of March, June, September and December. Forms close on the 20th of January, April, July and October.

Authors alone are responsible for statements made and opinions expressed in their respective articles.

ROCKS AND MINERALS PEEKSKILL, N. Y., U. S. A.

The Official Journal of the Rocks and Minerals Association

Books

Loomis, "Field Book of Common Rocks and Minerals" **$3.50**
One of the most popular books for beginners. 278 pages, 73 illustrations, including 24 in color.

Dana, "Minerals and How to Study Them" **$2.00**
Another popular book for beginners that will enable them to recognize the more commonly occurring minerals, and will serve as the foundation for a more extended study. 380 pages and many illustrations.

Dana, "Manual of Mineralogy" **$4.00**
This brief direct work fills the ordinary needs of the elementary student of mineralogy, the prospector, mining engineer and the geologist. 13th edition, revised by W. E. Ford. 460 pages, 357 figures and 10 plates.

Dana, "Text-book of Mineralogy" **$5.00**
Designed to give the student the means of becoming practically familiar with all the modern methods of investigations now commonly applied. 720 pages, 1050 figures, 3rd edition revised by W. E. Ford.

Dana, "System of Mineralogy" **$15.00**
A complete classification of all the mineral species known up to 1909. 6th edition with appendices I and II. 1323 pages, with over 1400 figures.

Wade, "A Text-book of Precious Stones" **$2.50**
Presents in a popular style the principles and methods in use in identifying precious stones. Useful to both the jeweler and the general public. 318 pages.

Cox, "Prospecting for Minerals" **$2.50**
A practical handbook for prospectors, explorers, settlers, and all interested in the opening up and developing of new lands. 260 pages.

McLeod, "Practical Instructions in the Search for, and the Determination of the Useful Minerals" **$2.50**
A valuable book for prospectors as it furnishes simple means for identifying the useful minerals and rare ores. 254 pages.

Postage extra on all the above books. Remit 25c to 50c for this, and the amount due you will be returned.

BOOK DEPARTMENT

Rocks and Minerals **Peekskill, N. Y.**

ROCKS and MINERALS

Edited and Published by Peter Zodac

PUBLISHED QUARTERLY

SEPTEMBER 1932

Rocks and Minerals Association's First Outing a Grand Success

June 26, 1932, will go down in history as a red-letter day for the Rocks and Minerals Association. For this date will commemorate the Association's first outing held at the historic old Forest of Dean Mine, near Fort Montgomery, Orange County, N. Y. The outing, under the direction of Fred W. Schmeltz, was a success from start to finish with 31 members and 70 friends comprising the party who were present. And the joyful and friendly crowd that gathered to celebrate the event saw the day pass too quickly.

The outing was officially opened at 11.00 A. M., when, at a signal from Mr. Schmeltz, director in charge, a caravan of 23 cars left the west end of the Bear Mountain Bridge for the iron mine, six miles away. The route went through country of scenic beauty and of much historic interest reminiscent of the Revolutionary days. The site of old Fort Clinton was right at the starting point; the gorge of Popolopen Creek, with the site of old Fort Montgomery on its opposite bank, was crossed and passed; the aerial bucket tramway over a mile long which transfers ore from a narrow-gauge mine railroad to the docks on the river paralleled the road as did also the railroad which wound around the majestic Torne, a bold crag. These points of interest would appeal to anyone who finds joy and beauty in nature and in history. And when the mine was reached, just before noon, it was fitting and proper to terminate the trip by proclaiming a lunch hour.

Right after lunch, James F. Morton, Curator of the Paterson Museum, Paterson, N. J., favored the delegation of girl scouts present with an interesting talk on minerals to be found at the mine and how some of them could be recognized. This was well received and much appreciated by the young ladies.

Then the activities of the day began in earnest. The collectors scattering to the various dumps started hammering and digging away with such enthusiasm and energy that when a call went up later to come in and have their picture taken only about one-half could be induced to leave.

By 4.00 P. M. most everyone seemed well supplied with specimens and as the day was hot those who had some distance to go left for home. The remaining two dozen or more were approached for the purpose of visiting the Beechy Bottom mica mine five miles away. The trip was approved and carried out.

The Beechy Bottom mine is on the property of the Bear Mountain Park. It is only a little mine, now abandoned, and more in the nature of a prospect pit than a regular workings. It is somewhat difficult to reach as it entails a hike of a mile from the spot where cars have to be left but all who made the trip were well rewarded as excellent loose crystals of biotite and graphite crystals in rock were theirs for the taking. This little mine furnshed far better specimens and at practically no effort on the part of those present than did the large iron mine. This concluded the activities of the day.

No outstanding minerals or remarkable

finds have been reported but many interesting specimens were collected. The mineral which seemed to arouse most interest was sunstone and many specimens of good quality were collected. Epidote, in minute crystals of brilliant green color lining cavities in pegmatite, were plentiful. Quartz coated with hematite, sagenetic rock crystal (containing magnetite inclusions), gemmy apatite grains in four colors with green augite in pink calcite, and many others were found and collected. In the piles of waste rock many interesting features were observed such as veinlets of magnetite in gneiss, contacts of a dike rock (diabase with gneiss), etc.

Our grateful and most appreciative thanks are extended W. A. Rigby, Superintendent of the Forest of Dean Mine, for his very gracious cooperation and interest in permitting the Rocks and Minerals Association the special privilege of holding their outing at this historic old mine. Thanks are also due C. E. Floom, Superintendent of the Bear Mountain Bridge and his associates for their cooperation and interest in allowing us to meet at the bridge and in assigning a parking space for this purpose. And we are also indebted to **The Peekskill Evening Star** and to their representative, Donald Albertson, for the very interesting write-up given the outing in the June 27th issue of their very fine newspaper. Nor should we here neglect to express a very deep appreciation to those members who have shown their interest not only in appearing personally at the outing but in bringing friends with them as well. These we feel are indeed our friends and they are very dear to us.

And a special vote of thanks, in which so many members have joined us, are extended Fred W. Schmeltz, Director of Outings. Keenly interested in the Association, highly efficient and capable, and an untiring worker, he had taken up his responsibilities with such an interest and enthusiasm the outing just had to be a success. He made two special trips to the locality to confer with Mr. Rigby and to ascertain how best the mine could be reached. He took full charge of all correspondence relative to the outing and otherwise gave his time and attention to the matter. The Association is to be congratulated for having such a member and worker within its ranks. And the Association has shown its gratitude by appointing Fred W. Schmeltz, permanent Director of Outings.

PETER ZODAC, Secretary.

The following registered at the Outing.
Members are printed in heavy type.

CONNECTICUT

Bridgeport: **Sidebottom, Lawrence.**
New London: McGuire, Miss Agatha.
Norwalk: Chandler, Miss Frances.

ILLINOIS

Danville: Wellenreiter, Miss Mary Lou.

IOWA

Iowa City: Bond, Miss Alice.

MARYLAND

Baltimore: Ikena, Miss Edna.
Cumberland: LeFevre, Miss Eleanor.
Hagerstown: Moser, Miss Jean.

MASSACHUSETTS

Boston: Boland, Miss Gladys.
Cambridge: **Beckwith, Mrs. Grace.**

MINNESOTA

St. Paul: Edwards, Miss Dorothy.

MISSOURI

St. Louis: Harris, Miss Josephine.

NEW JERSEY

Arlington: Dzieman, Arthur.
Burlington: **Morgan, Leonard A.**
Carlstadt: Conboy, Joseph.
Conboy, Miss Louise.
Shearer, Miss Anne
Clifton: **Borneman, Bernard J.**
East Orange: **Brooke, E. F.**
Fair Haven: Algor, J. R.
Algor, Mrs. J. R.
Algor, Marshall M.
Leonia: **Weber, Jay A.**
North Caldwell: Dauterman, Carl.
Ocean Grove: Parker, Miss Marion.
Orange: **Giordano, Vincent.**
Reamer, Louis.
Woods, Arthur E.
Paterson: **Morton, James F.**
Plainfield: Cady, Miss Jean.
Donley, Roderick.
Upper Montclair: **Fifield, Ernest G.**
Fifield, H. B.
Fifield, Haven.
Gray, Jack.
Westfield: Sourbier, Mrs. C. J.

NEW YORK

Arverne: Fluhr, George.
Bronxville: **Stegel, Joseph J.**
Brooklyn: **Butan, John J.**
Butan, Sylvester.

Case, Miss Ethel E.
Delano, Miss Edith.
Grenzig, John A.
Grenzig, Mrs. John A.
Mayorga, Donald.
Mayorga, H.
Mayorga, Mrs. H.
Thein, Peter.

Burlington: Allen, Miss Doris.
Allen, Leon L.
Allen, Mrs. Leon L.
Allen, Miss Marie.

Castle Point: Schmidt, Miss Gertrude.
Wright, Miss Helen.

Cooperstown: Wicks, Miss Marjorie.

Highland Falls: Rigby, W. A.

Long Island City: **Fluhr, Thomas W.**

Mineola: **Harzfeld, Stanley.**

Monsey: McCreary, Howard.
McCreary, Roy.

New York: **Cady, Dr. Bertha Chapman.**
Cady, Dr. Vernon.
Hippensteel, C. L.
Kalb, R. M.
Mears, R. B.
Schmeltz, Fred W.
Schmeltz, Mrs. Mary S.
Schoof, Carl.
Voelchert, Miss Litta L.
Werner, Miss Ida.

Ozone Park: DeRemer, F. H.
DeRemer, Mrs. F. H.

Peekskill: Albertson, Donald.
Albertson, Larrabee.
Anderson, H. Alban.
Crossman, Mrs. P. G.
Crossman, Watson.
Doherty, Emmet.
Hartert, Vincent.
Leslie, John.
Libby, Clyde.
McAdie, Miss Muriel J.
Ustic, Paul.
Zodac, Peter.

Queens Village: Rolfe, H. J.
Rolfe, Mrs. H. J.

Spring Valley: **Elliott, M., Jr.**
Wilson, Warren.

Tuckahoe: Forest, Richard.
McClelland, W. H.
McClelland, Mrs. W. H.
Rochester, Thomas.

White Plains: **Andrews, G. Malcolm.**
Andrews, Geo. E.

OHIO

Cincinnati: Gregg, Miss Myra.

Dayton: Banta, Miss Helen.
Coblentz, Miss Ruth.

PENNSYLVANIA

Cynwyd: Crossdale, Miss Emma K.

RHODE ISLAND

Providence: Brown, T. M.

TEXAS

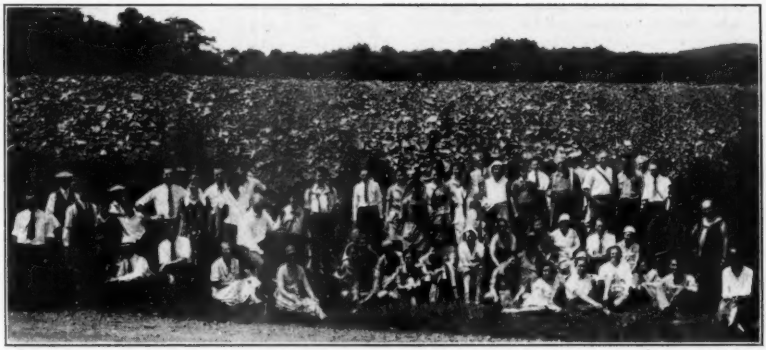
Big Springs: Rhoton, Miss Abbey Nell.

VIRGINIA

Norfolk: Peake, Miss Sallie.

Registered

Members	31	Women	42
Non-Members	70	Men	59
	101		101



1932

Rocks and Minerals Association Outing at the Forest of Dean Mine, Orange County, N. Y.

Minerals of the Forest of Dean Mine

Many of the minerals listed below had been reported by Whitlock (W) and Manchester (M) but we have enlarged the list to include varieties, form, quality and associated minerals. Those marked with an asterisk (*) were not found or noted at the outing (at least not reported as yet). The rest were found and reported by those mentioned.

As only a few collectors reported their "finds", we are of the opinion the list can be greatly enlarged. Will those who may have found other minerals kindly send in a report on them direct to ROCKS AND MINERALS so the list may be revised and reprinted in the December issue? Please follow the form below and send in the reports by or before Oct. 20th. We are anxious to have the list as complete as possible.

	Mineral	Variety	Form	Quality	Found in	Reported by
1	*Amphibole	?	?	?	?	M.
	*Amphibole	Pargasite	?	?	xline limestone	W, M.
2	*Anhydrite	?	?	?	?	M.
3	Apatite	Brown, red, violet, yellow	rounded grains	good	pink calcite	M, Z.
4	Biotite		flakes	fair	gneiss	S.
5	*Boltonite	Forsterite	?	?	xline limestone	W, M.
6	Calcite	Pink	xline	good	magnetite	M, S.
	Calcite	White	xline	fair	pink calcite	Miss Muriel J. McAdie
	Calcite	White	small xls	fair	pink calcite	Leonard Morgan
	Calcite	Dogtooth Spar	xled	fair	pink calcite	Lawrence Sidebottom
7	Epidote		granular	good	pegmatite	M, Z.
	Epidote		xled	good	pegmatite	Miss Muriel J. McAdie
	Epidote		xled (radiated)	good	pegmatite	Donald Albertson
8	*Gypsum	?	?	?	?	M.
	*Gypsum	Selenite	cleavages	good	magnetite	Z.'
9	Hematite		coating	poor	pegmatite	S.
10	Limonite		coating	poor	pegmatite	Z.
11	Magnetite		xline	good	gneiss	Main ore mineral
	Magnetite		small xls	good	pink calcite	Z.
	Magnetite	slickensided	xline	good	ore mineral	Lawrence Sidebottom
	Magnetite	iridescent	xline	fair	ore mineral	Z.
12	*Martite		xline	good	magnetite	R.
13	Oligoclase	ordinary	cleavable	good	pegmatite	M, Z.
	Oligoclase	gemmy	cleavable	good	pegmatite	Miss Muriel J. McAdie
	Oligoclase	Sunstone (gray)	cleavable	good	pegmatite	Emmet Doherty
	Oligoclase	Sunstone (red)	cleavable	good	pegmatite	Emmet Doherty
14	Pyrite		xled	fair	white calcite	Miss Muriel J. McAdie
15	Pyroxene		masses	good	pegmatite	M, S.
	Pyroxene	Augite (green)	xline masses	good	pink calcite	Z.
	*Pyroxene	Coccolite	?	good	xline limestone	W, M.
	*Pyroxene	Sahlite	?	good	xline limestone	W, M.
16	Quartz	Milky	vein quartz	fair	magnetite	M, Z.
	Quartz	Rock xl	xled (small)	fair	magnetite	Miss Muriel J. McAdie
	Quartz	Sagenitic	xled	fair	magnetite	Lawrence Sidebottom
17	*Spinel		large xls	good	xline limestone	W, M.
18	*Wernerite		?	?	xline limestone	W, M.
19	*Zircon	Reddish brown and black	?	?	xline limestone	W, M.

xls = Crystals xline = Crystalline xled = Crystallized ? = Not known

References:—
M—Manchester, James G.—*Minerals of New York City and Its Environs.* Page 72.
W—Whitlock, H. P.—*List of New York Mineral Localities.* Pages 56-57.
R—Rigby, W. A.—Superintendent of the Forest of Dean Mine.
S—Schmeltz, Fred W.—Personally collected on previous visits.
Z—Zodac, Peter—Personally collected on previous visits.
Z'—Zodac, Peter—Nice cleavage specimens of selenite were found in the mine in 1920 and were on display in the office at that time.

Geysers

——*By*——

EUGENE W. BLANK

Scientific Editor, ROCKS AND MINERALS

Out of the bowels of the harmless earth.—Henry IV.

Nature has placed her most lavish gifts within the reach of everyone. The wild woodland, the placid lake, the downy meadow with its gaily nodding flowers, the stern mountain peak glittering in the morning light, radiant sunset and evening star; these are gifts that may be had for the seeking. But of all these offerings, nature in her prodigality, has given one that surpasses all others. Of all her wonders none is so spectacular, so strange, so startling, so weird as the geysers. Once seen the memory and mystery of them will linger long in the mind of the fortunate observer.

Geysers have been known for a great many years. The first notice of the Great Geyser of Iceland occurs seven centuries ago. The word geyser is derived from the Icelandic word geysa, meaning "to be impelled". Geysers are only found in regions of recent volcanic activity and in comparatively few of them, being found only in Iceland, New Zealand and Yellowstone National Park of Wyoming (United States). The latter park embraces approximately 60 active geysers.

In 1812, Sir George Mackenzie, in a work entitled "Travels in Iceland", proposed an explanation of the Giant Geyser but his conjectural explanation could not possibly account for all cases of geysers. He imagined a geyser tube to communicate with a subterranean cavern the neck of which was contracted. This cavern would partially fill with water by percolation and this water becoming heated, the steam so generated would accumulate in the space above until, having gathered sufficient force, it would push out the superincumbent layers of water in the geyser tube. The arrangement can be better visualized by holding a chemical retort vertically, in which case the bulb corresponds with his cavern and the neck of the retort with the geyser tube.

His explanation, while ingenious was not satisfactory, although it lasted until the year 1846. In that year Robert Wilhelm Bunsen, the great German chemist, spent three or four months in Iceland, where he devoted himself to a close study of the rocks and became greatly interested in the geysers. His work on the Icelandic rocks has been referred to as laying the foundations of modern petrology while he conclusively proved that the geyser water was not volcanic as most geologists of the period believed. Bunsen was able to prepare water like it by boiling distilled water with the local rocks and he came to the conclusion that the geyser water was of surface origin.

Prior to an eruption Bunsen was able to take the temperature of the water at various depths in the geyser tube and he made the rather surprising discovery that at no point was the water at its boiling point. The figures* in the drawing give the depth in feet of the water and the observed temperature together with the calculated boiling point of water at that depth. It will be noticed that the observed temperature is at no time equal to the boiling point of water at that depth.

Previous to an eruption detonations which shake the ground are heard at intervals and each is succeeded by a violent agitation of the water in the basin. These detonations are caused by steam escaping from side ducts into the main geyser tube, where it is suddenly condensed.

Let us suppose that by the entrance of this steam the geyser-column is violently lifted several feet as the surface activity indicates is the case. Then each point in the column finds itself under a pressure less than that at which it boils and instantly steam is generated; from the middle downward the mass bursts into a turbulent ebullition lifting the upper layers

*Proceedings of the Royal Society of Edinburgh, April 1875.

of water high into the air in majestic grandeur.

Ascending into the atmosphere with impressive splendor the water is gradually cooled and drops back to the basin, refilling the tube. Numerous detonations are again heard but there can be no eruption until the water in the tube comes near enough to its boiling point to make the lifting of the tube effective in instantly converting a large mass of water to steam.

The height to which the water will rise depends on several factors, among which may be mentioned the amount of steam, diameter and straightness of the tube, etc.

Geysers gradually build up crater-like basins and cones about their opening of material deposited from solution. In the Yellowstone Park the precipitation of the silica is due partly to cooling, but largely to the algae which abound even in the boiling water and the brilliant and superb glow of the colors of some of the deposits about the springs are attributable to these minute plants. When the water from any geyser or hot spring ceases to flow, the plants die and the spectrum of color fades.

The cone which a geyser slowly builds up has the effect of increasing the depth of the tube and when the tube has reached such a height that the water in the depths below, owing to the increased pressure, cannot attain its boiling point, the eruptions cease. We then have a hot spring which slowly adds to the cone until there results what is called a Laug, or Cistern, many of which are forty feet in depth. Their beauty, according to Bunsen, is indescribable; over the surface curls a light vapor; the water is of the purest azure, and tints with its own hue the fantastic incrustations on the cistern-walls; while at the bottom, is often seen the mouth of the once mighty geyser.

The continual heating of the geyser water eventually cools the source of heat and unless increments of heat are advanced the time between eruptions become longer and longer. With the passing of time a geyser ceases to erupt and it is very probable that all existing geysers will become extinct within a time, which is geologically speaking, comparatively short. New geyser regions may develop as time passes but the probability of their doing so will diminish as the earth slowly cools off.

In 1770, the Great Geyser of Iceland broke into eruption nearly every hour; in 1814, every six hours; in 1872, only once or twice a week; at the present time often a week elapses between performances.

Old Faithful in Yellowstone Park formerly erupted at regular intervals of about an hour. Its reputation for steadiness is in grave danger. Not only is its period of eruption lengthening but it is becoming irregular, and what is worse yet these factors seem to be increasing. Formerly erupting regularly every 60 minutes it now sometimes lags to 80 minutes.

A laboratory model of a geyser for demonstration purposes can be readily made. Reference to the drawing will show the main points of construction. The main tube, which corresponds to the geyser tube, is 3 feet in length, ¾ inches in diameter at the opening and 2½ inches in diameter at the closed end. A return basin of 2 or 3 feet in diameter is attached at the smaller diameter to receive the falling water. Placing the apparatus in an upright position bunsen burners are placed under the tube. At regular intervals hot water and steam will erupt to a height of approximately two feet. By corking the tube much higher eruption can be secured but in this case the display had better be conducted outdoors.

In the Yellowstone Park the geysers are mainly found in the bottoms of the valleys but existing remains on higher ground tend to show that as valleys deepened the ground-water has found lower and lower points of issue. The source of heat is unknown, though it is believed to be uncooled part of extruded or intruded lava.

For a description of the geysers of Iceland I present the words of Tyndall. "The surface of Iceland gradually rises from the coast toward the centre, where the general level is about 2,000 feet above the sea. On this, as on a pedestal, are planted the Jokull, or icy mountains of the island, which extend both ways in a north easterly direction. Along this chain also occur the active volcanoes of Iceland, and the thermal springs follow the same general direction. From the ridges and chasms which diverge from the mountains enormous masses of steam issue at intervals, hissing and roaring; and, when the escape occurs at the mouth of a cavern, the resonance of the cave often raises the sound to the loudness of thun-

der. Lower down, in the more porous strata, we have smoking mud-pools, where a repulsive blue-black aluminous paste is boiled, rising at times in huge bubbles, which, on bursting, scatter their slimy spray to a height of fifteen or twenty feet. From the base of the hills upward extend the glaciers, and above these are the snow-fields, which crown the summits. From the arches and fissures of the glaciers, vast masses of water issue, falling at times in cascades over walls of ice, and spreading for miles over the country before they find definite outlet. Extensive morasses are thus formed. Intercepted by the cracks and fissures of the land, a portion of the water finds its way to the heated rocks beneath; and here, meeting with the volcanic gases which traverse these underground regions, both travel on together, to issue, at the first convenient opportunity, either as an eruption of steam or a boiling spring."

The great geyser district of New Zealand is situated in the south of the province of Auckland in the upper basin of the Waikato river, to the N. E. of Lake Tanpo. In this region are found not only a great number of geysers but a profusion of boiling springs, steam-jets, and mud volcanoes together with many weird and fantastic silica formations. Around the year 1880 the geysers were no longer active until the great Tarawera eruption of 1886 when, seven gigantic geysers came into existance. For a period of four hours, mud, stones and boiling water was discharged to a height of 600 to 800 feet. Since that time things have been quiter.

Waikite, near Lake Rotorua, was discovered in 1901 and for five years played practically every day. It sometimes threw mud and stone to a height of 1500 feet. For no apparent reason it is now dormant.

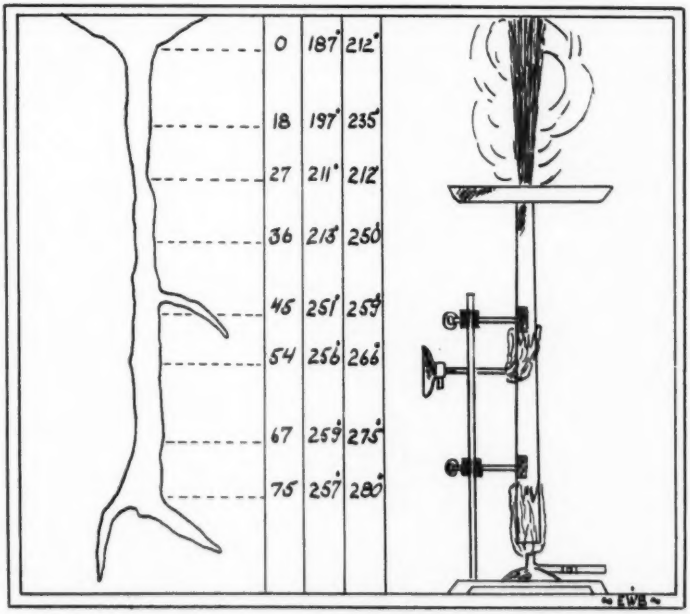


Diagram of a geyser tube and a laboratory demonstration model of a geyser. The figures in the first column give the depth in feet of the geyser tube, those in the second give the observed temperatures, while those in the third column give the calculated boiling point of water at that depth.

Paper for Museum Labels*

—*By*—

L. J. SPENCER, M. A., Sc. D., F. R. S.

(*Mineral Department, British Museum*)

(Read at the Plymouth Conference, July, 1931)

Every specimen in a museum should be accompanied by a permanent label, not necessarily for exhibition, on which are given such particulars, especially mode and date of acquisition and locality, as cannot be determined by mere inspection of the specimen. If this label cannot be actually attached to the specimen, then the specimen should bear a small numbered ticket, and the number repeated on the label and also in the museum records. It is useless to write such labels on any kind of paper that may come to hand. They should be such that they will last as long as the specimens themselves—and as long as the museum is to last, and so preserve the historical details for the benefit of our successors. One of the functions of museums that is often overlooked is the preservation of historical records; and this applies more especially to the large national collections.

The durability of the paper for permanent labels is therefore a matter of the first importance. This is unfortunately realized by but few museum curators, as is demonstrated by the labels that I have collected from a large number of museums and collectors. Very few are of good durable paper. Many curators fancy card labels, which are thoroughly bad, for when doubled they crack and break. I have considered this problem seriously for several years. In 1904 I started the use of permanent labels on durable paper in the Mineral Collection of the British Museum. In 1907-8 I attended evening classes on paper testing and paper making at the Battersea Polytechnic, and visited paper mills.

Previous to the middle of last century paper was made almost exclusively of rags and was of a durable nature. Since then, owing to the greater demand for printing papers, other materials have been introduced, and cheaper papers, well suited for passing uses, have been produced in vast quantities. The paper used for museum labels must be an all-rag, handmade, tub-sized paper, composed mainly of linen with little cotton and no wood, esparto, or straw fibres. Such paper is extensively used for bank notes, and there is fortunately no difficulty in obtaining the right kind. It is not necessary for the museum curator to become an expert in the intricacies of paper testing and to determine under the microscope the kind of fibres of which the paper is made. A rough and ready test is given by the "rattle" of the paper and by repeatedly folding and creasing or by crumpling up and rubbing a sheet of paper.

The paper used since 1904 for the permanent labels placed with each specimen in the Mineral Department of the British Museum is a bank-note paper having about the thickness (0.09 mm.) and stiffness of one-pound and ten-shilling notes. It consists of linen fibres with a little cotton, and is sized with gelatin and some rosin. There is no mineral loading (ash 0.85%). The paper weighs 87 grams per square metre, and the labels are cut square with a side of just over 2 inches (about 4 square inches). The name of the collection "British Museum (Mineral Dept.)" is printed on the head of the label, and a special space is reserved for the register-number.

The extra cost of such paper is of no consequence. The difference between one penny or one shilling a pound (giving 1,800 labels of 4 square inches) is negligible, if the labels are to be carefully written to give a permanent record, rather than merely scribbled. It is important also to write the labels with a permanent ink, and especially one free from acid, which acts on the paper. Indian ink is the best. Rubber-stamp inks,

*Reprinted from THE MUSEUMS JOURNAL, Vol. XXXI, December, 1931.

although first tested in sunlight, have been found to fade in twenty-five years. A series of labels in which part of the information is duplicated should be printed with printer's ink. Paper of any kind is destroyed by free acid, e. g. labels that come into contact with specimens of decomposing iron pyrites are soon reduced to powder.

For adhesive labels the paper mentioned above is too thick, as they then have a tendency to flick off when the adhesive material becomes brittle. For the small labels (about ⅜x¼ inch) bearing only the register-number attached to each specimen, I have, since 1905, used a thinner bank-note paper, about the thickness of a five-pound note. Gummed labels are not always reliable, as the quality of the gum or dextrin varies. After many trials I found that the best method was to wet the label and fix it with a fish-glue (seccotine or mendine) mixed with a few fibres of cotton-wool and pressed tightly into the crevices of the stone. Adhesive labels for microscope slides are made of the same thinner bank-note paper.

The labels so far mentioned are "permanent labels" for preserving records. They are folded up and placed beneath exhibited specimens or are placed in drawers with unexhibited specimens. A problem of another kind is presented by exhibition labels. Here light produces some effect on the color of the labels, and unless all are printed on the same quality of paper and set out at the same time the exhibition cases will soon show a patchy appearance. In the Mineral Collection of the British Museum many thousands of printed card labels are shown with the exhibited specimens. These are frequently replaced and new labels added. Any labels printed on card containing even a small proportion of mechanical wood pulp change to a nut-brown tint on exposure to light after a year or so. A pure rag card shows no change. The material of good quality visiting-cards or Bristol-board is suitable. A quick and ready test for change of color I find is to place the samples in an air-oven at 160° C. or close to a silica-glass mercury-vapor lamp for one hour. Under either of these treatments papers containing any mechanical wood pulp turn brown. Colored lining papers will in most cases fade on exposure to light,

and when any rearrangement is made the case will show a patchy appearance.

The permanency of printing papers for books is another matter, but I will anticipate any questions by giving the results of some tests that I made in 1907. The **Philisophical Transactions** and **Proceedings of the Royal Society of London** were printed in 1904 on an all-rag paper, consisting mainly of cotton with some linen. The **Quarterly Journal of the Geological Society** for 1906 is mainly a chemical pulp (pine) with some esparto. The **Journal of the Chemical Society** for 1907 is esparto with some chemical wood pulp. The **Mineralogical Magazine** for 1905, esparto with very little chemical wood pulp, but unfortunately too much mineral loading (16.3% ash), though the paper is still remaining good. These papers are all still in good condition, though of course the lapse of only a quarter of a century is not a sufficient test for permanency. The straw paper of a German book, which I purchased in 1893, is now very brittle and falls to pieces when crumpled. Undoubtedly for permanent records of any kind an all-rag paper, mainly of linen fibres, should be used. "Art papers" with coated mineral surfaces should be avoided.

Collecting

Man's Earliest Economic Activity Has Become His Most Popular Pastime

—*By*—

BERNARD J. BORNEMAN

Clifton, N. J.

In reaching his present economic status, man has passed through several stages of progress and development. Primitive man, living in the first of these stages, obtained a precarious livelihood by gathering fruits, nuts, eggs, shellfish and other edibles that were easily acquired. How long this period of direct appropriation, or collecting, lasted is a matter of conjecture, but one thing about it seems to be certain: it left an indelible imprint upon the human race. That imprint is in evidence on every hand, among all races, in every land, in almost every home. It finds expression in various ways, but it is ever present. It is the universal urge to collect.

As the economic status of the human race slowly but surely changed from a fight for mere existence to a condition in which there was some time available for other pursuits, what could have been more natural than that men should extend their collecting activities to include articles that served other than purely utilitarian purposes? It is not strange that they did so, or that collecting has continued to the present day. It appears to be an instinctive characteristic of the race, one that has gained strength in proportion to human progress.

The most primitive peoples of the present era collect the same things that the earliest men gathered, in much the same manner and principally for the same basic reason. They collect mainly for a livelihood, but, having traveled the road of economic progress just a little farther than had their prehistoric forebears, primitive men of today collect not only those things that are necessary to the maintenance of life but also some things that are not absolutely essential to their existence: bits of coral, shells, teeth, feathers, and trophies indicative of their prowess in the hunt or in battle—which they display, not as their civilized collecting brethren do in glass cases and museums, but by carrying them about as articles of personal adornment.

Among the more enlightened peoples, the getting of a livelihood is not the simple matter that it is for the semi-civilized and the savage, but, even among those who have advanced farthest beyond the first and meanest economic stage, collecting is, nevertheless, an important part of life. To be sure, as men have progressed economically, collecting has gradually become a minor, rather than a major, interest in most lives, but many there are who devote a very large share of their time to collecting—some as a hobby, some as a science, some as a business or profession.

Thus it is that, although collecting had its origin among the most primitive men, it has reached its highest development among the most advanced peoples. The result is thousands of public and private collections, the total intrinsic and educational value of which is inestimable. The United States, Great Britain, France, Germany and other progressive countries number their collectors by the hundreds of thousands—princes and peddlers, merchants and manufacturers, housewives, professors, lawyers, engineers and unnumbered thousands of others whose diversity of major interests in life is equalled only by the diversity of the objects collected. They include King George, with his superb collection of British postage stamps, and the world's largest financial institution, the Chase National Bank of New York, with its remarkable collection of moneys of the world.

To the variety of things collected there is no end—ancient armor, ivory carvings, paintings, clocks, theatre handbills, bottles, swords, pipes, pistols, glassware, minerals, fossils and everything else that is movable. Always and everywhere the ceaseless search for new specimens goes on, and doubtless it will continue to go on to the very end of time, if end there is to be.

Collecting is a pastime that is not likely ever to lose its popularity. There is no other that has endured as long, none that is as universally indulged, none that adds new devotees as rapidly. Born with man, collecting is the world's most ancient calling; it is destined to live as long as the human race endures and to continue to give pleasure to countless millions of members of earth's most ancient fraternity, whose meeting place is everywhere and whose membership embraces all peoples, in every clime, in all ages—the ancient and honorable society of collectors of the world.

Sapphires near Peekskill, N. Y.

—*By*—

PETER ZODAC

Editor Rocks and Minerals

An interesting occurrence of sapphire crystals, in a gabbroic matrix, has been found by the writer at the emery mines in Toddville, near Peekskill, N. Y. The crystals are small, gemmy, and somewhat off-color and occur with garnet crystals (almandite), the latter much larger and so plentiful that the sapphires appear lost in a hand specimen.

On Saturday, May 14, 1932, accompanied by George and Charles Dietz, brothers and warm friends of the writer, a trip was made to the emery mines for the purpose of a reconnaissance. A large prominence some few hundred feet west of the emery locality had long attracted the attention of the brothers and we accordingly headed directly for it as our first objective. This proved to be gabbro penetrated by small narrow veins of emery. The route taken from here to the emery pits crossed a small outcrop, also of gabbro, and it was in this latter formation that the sapphires were found. The outcrop was so heavily studded with garnet crystals that the crystals stood out in relief and attracted our attention. A chance breaking off of a corner of the rock by George Dietz led to the discovery of the sapphires.

The locality is 110 west of the Strang Emery Pit (the most northwestern pit in the district) and about 2,000 feet south of Crompond Road, a concreted state highway, and almost in line with the extension of Dimond Avenue. Dimond Avenue is two miles east of the business section of Peekskill and runs south off Crompond Road.

The outcrop is 50 feet long, 3 feet high and projects out as a narrow bench. Its strike is approximately due north and south. The area is heavily wooded.

Though the discovery of the sapphires was accidental, its occurrence was not altogether unexpected as some years previous, when accompanied by Charles Travis, also of Peekskill and a warm friend of the writer, common corundum crystals were found in approximately the same locality. The discovery of the sapphires was also interesting in that it was the first occurrence of the mineral to be reported from the district, if not from the entire county.

Associated with the sapphires and duplicating them in size were cyanite crystals.

Interesting specimens of opal (hyalite) and minute analcite crystals were found the same day at the Strang Emery Pit.

The writer wishes to express his thanks to Messrs. George and Charles Dietz for accompanying him on the trip and for many courtesies extended him and to Mr. Raymond H. Ewell of Washington, D. C., for examining and verifying the specimens found.

George Frederick Kunz, A. M., Ph. D., D. Sc. - 1856-1932

Not only to mineralogists, youthful, amateur or professional, but to others from humble to high, the career of George F. Kunz, whose life ended suddenly on June 29th, points a way.

Born in New York City in 1856, he was educated at the public schools and Cooper Union where his taste for chemistry, mineralogy, and art were fostered. His interest in mineralogy is believed to have been first aroused by the fine specimens obtainable in his boyhood in abundance at near-by Bergen Hill, Weehawken, N. J. His collection of that period, now in the New York State Museum, is rich in specimens from that locality.

Before his twentieth year he was well known at Columbia's School of Mines and at the then infant American Museum of Natural History. In 1876 he was at the Centennial Exposition at Philadelphia, the first for him of the many later Expositions he attended in more important capacities. Although he recently told the writer that at that time he had no intention of going into the jewelry trade nevertheless, in 1879 he was called to associate himself with Tiffany & Company, particularly because of his knowledge of semi-precious stones which were then beginning to be considered worthy of attention by jewelers. From this start he became known as the gem expert of Tiffany's with which firm he was associated until his death, for more than fifty years.

Vice-President and stock holder of his Company, he was not only gem expert but expert buyer, keen and clever in finding original material and profitable customers. Perhaps he was most expert in making himself widely known through multifarious activities in many fields and associations both scientific, civic and historical, all of which counted as good business advertising. Tall, spare, distinguished in appearance, always well groomed and with a nervous quickness of manner and speech which at times seemed abrupt and marred his delivery as a lecturer, he was efficient in all he undertook.

The notable collections of gems and minerals exhibited by Tiffanys at Expositions both here and abroad were planned, gathered and often attended by Dr. Kunz. Afterwards these collections were sometimes sold to Museums. The nucleus of the Morgan Gem Collection at the American Museum of Natural History in New York City is the Tiffany exhibits at the Paris Expositions of 1889 and 1900. These and other specimens were purchased by J. P. Morgan, Sr., and presented to this Museum. Dr. Kunz was for years up to his death, Honorary Curator of this collection. Among many finer gems in this collection, mention of the pinkish-lilac spodumene named after him "kunzite", and the rose-pink beryl named by him "morganite", should be given here.

His New York City Mineral Collection he willed to the New York Mineralogical Club of which he was the founder in 1886 and for many years its President. This collection, which he wishes exhibited at the American Museum, will probably be included with the collection of the Club now there. These specimens were chiefly collected prior to 1900 by himself and William Niven. Notable among them are a six-inch garnet crystal weighing nine pounds ten ounces from 39th street, near Broadway; a showy group of smoky quartz crystals on white dolomite from Kingsbridge ship-canal; and xenotime and monazite crystals from the Harlem River Speedway.

One thousand dollars each he bequeaths to the New York Mineralogical Club, the Mineralogical Society of America and the New York Academy of Sciences and fifteen hundred dollars to Columbia University for mineral specimens, besides many bequests to family and friends.

Dr. Kunz was the author of many hundreds of articles and books, notably **The Gems and Precious Stones of North America, The Book of the Pearl, The Curious Lore of Precious Stones, Shakespeare and Precious Stones,** and **Ivory and**

the Elephant. Probably his earliest published articles are on various falls of meteorites and on artificial rubies and on the gem collection of the U. S. National Museum which appeared from 1885 to 1889. His report on the precious, gem and decorative stones of Canada in 1887 was followed by a book in 1890 covering deposits of these stones in North America and in 1907 by separate articles on those of Mexico, North Carolina and California. For years he was in charge of the Reports on the Mineral Industry for the United States and was special agent for precious stones for the Census. The U. S. Fish Commission appointed him to investigate American pearl fisheries from 1892 to 1898. And in 1893, Washington published his Report on Jewelry at the Paris Universal Exposition in 1889. This gives some idea of his many activities.

Diamonds for him had perhaps more of scientific than commercial interest though he was quick to investigate new discoveries such as were made in Arkansas. The discovery by his wife that a diamond she wore phosphoresced in the dark resulted in a series of experiments starting in 1891 and continuing till 1903 when in collaboration with Prof. Charles Baskerville of the College of the City of New York and with the use of radium, actinium, Roentgen rays and ultra-violet light, many species of minerals and gems were tested for phosphorescence and fluorescence.

Jade and fabrications of it were included in his many interests and he edited and contributed the mineralogical portion and some of the descriptions to the sumptuous catalogue of the celebrated Heber R. Bishop Jade Collection now in the Metropolitan Museum of Art. In 1899 Dr. Kunz located the largest known but one mass of jade in a quarry in Jordansmuhl, Silesia, from which jade had been reported before. This mass weighing 4710 pounds is exhibited in the Morgan Mineral Hall by the Bishop Estate.

His earlier interest in meteorites was perhaps revived by the discovery of microscopic diamonds in the Canyon Diablo meteorite which later were found by Moissan to be associated with greenish carbon silicide which Kunz named Moissanite, a name now accepted. This was given in 1905 in the **American Journal of Science** and in 1907 a paper entitled **The Diamond and Moissanite; natural, meteoric and artificial** was read by him before the American Electro-Chemical Society.

Rarely did a hint of mineralogic or allied interest escape his attention, investigation and exploitation. He was ever alert to capitalize adroitly anything that had an advertising if not an immediate commercial value. Through numerous world-wide acquaintances, from humble student to savant, from the poor collector of specimens to a Wall Street magnate, he was ever in touch with sources of knowledge and supply, potential helpers and possible customers.

Cleverness in organization and drafting of associates is well illustrated in his planning of the Abbe Hauy Celebration of 1918 of the New York Mineralogical Club and the 1921 Radium Exhibit and Reception upon the conferring of honorary membership on Madam Curie.

He was past-president of the American Geological Society, New York Academy of Sciences, New York Mineralogical Club, American Association for the Advancement of Science and past vice-president of the American Institute of Mining and Metallurgical Engineers, and an officer of the Legion d'Honneur and other foreign societies.

In later life he founded and was president of the Museum of Peaceful Arts and was president of the American Scenic and Historic Preservation Society and the City History Club. He did much civic good in these fields and aided in the establishment of the Museum of the City of New York and served on the Hudson-Fulton Celebation and Joan of Arc Statue Committees of the city. His services were not perfunctory for he rarely missed a meeting of a society with which he was associated and seemed to be tireless in his work which was also his avocation.

His degrees were A. M. from Columbia in 1898; Ph.D. from Marburg in 1903 and D.Sc. from Knox in 1907. His body was interred in the 155th Street Trinity Cemetery after an impressive, largely attended service at St. John the Divine Cathedral.

GILMAN S. STANTON.

The Gem Department

Conducted by GILBERT HART

With this number of the magazine marks the introduction of an enlarged and more diversified GEM DEPARTMENT which we trust will meet with the approval of our readers. For some time past the magazine had been conducting a gem department which had been more or less limited in its scope or operations It is the policy of the officers and editor of our Association to comply when possible with the wishes of our readers, hence, due to a popular demand on the part of a large number, the officers have been busy for the past several months with plans for the consummation of this long felt want.

Within recent years we have witnessed the large number of new synthetic and artificial materials used for "gems" appearing on the market, leading to more or less confusion. Further, much of the data which has been forthcoming from some sources in the past is not at all scientifically accurate.

The result of this has been a demand on the part of mineral collectors, gem collectors, gem miners, gem conniosseurs, jewelers and the general public for accurate and reliable data on this subject. Since all the naturally occurring gem materials fall under the heading of mineralogy, it is only fitting and proper that ROCKS AND MINERALS should be the leader in the dissemination of this knowledge to our readers.

The editorial staff of the magaine has been fortunate in securing the services of a number of well-known gem and gem mineral experts to conduct this department along the proper lines. Every effort will be made by the staff of writers to impart their findings in a style and language readily comprehended by all readers. In addition to informing the readers on points upon which standard text books are vague or at variance, original articles of a research nature will appear as well.

As with the pages of all departments of the magazine, the gem section will be open to any reader wishing to contribute material for publication, but every effort will be made to keep this department free of any errors and all articles will be passed upon by the regular staff of writers, prior to publication.

TURQUOISE IN NEVADA

By

DR. H. C. DAKE

Of all the numerous gem materials which man has mined, turquoise is considered to be one of the first produced on what we would call today a commercial scale. We are told that turquoise has been known to the southwest Indians for many thousands of years. Even at the present time turquoise is highly prized by the Indians of the Navajo Reservation, where the gem is usually mounted in hand fashioned silver mounts, as well as being made into beads and pendants. Large quantities of the cheaper grades of the greenish colored material is shipped annually to the Navajo Reservation. The early Pharoh kings of Egypt, some 6000 years ago, sent large mining expeditions, guarded by armies, to the Sinai region

The Royal Blue Mine, Nevada—Dumps, Screens, Sorting House.

to mine the gem turquoise. The Arabs of today still mine some turquoise in that region.

The best known turquoise mines of Nevada are located in the vicinity of Tonopah, where very fine grades of the blue and green are being produced. Much of the better quality of Nevada turquoise has a distinct translucent appearance, especially when cut thin, and often resembles the finer grades of jade. In this respect the Nevada material is superior to the Persian, which often has a dull opaque appearance. The Nevada turquoise also takes a better polish than the foreign material. A noteworthy fact in connection with turquoise is that, it is almost never found in very large pieces (gem quality), hence large cut stones are seldom seen. Practically all other gem minerals have at some time in history been found in extraordinary sizes, but turquoise seems to be the exception to this rule. A piece of rough blue turquoise two inches square, and thick enough for cutting and polishing, is considered quite large. For this reason it is unusual to see large matrix specimens of turquoise in our mineral collections. One of the best and largest specimens coming from Nevada and seen by the writer, measures about 3x5x10 inches, including the matrix, with two, one-half inches layers of fine blue turquoise running horizontally through a light colored matrix, making a magnificently beautiful specimen.

Due to the fact that this material occurs in only relatively small pieces and with the large amount of matrix often present, there is a great deal of waste in the mining as well as cutting. Frequently in cutting what appears to be a large mass, a great deal is lost in cutting away the excess matrix and getting out the better portions. The fine blue semi-translucent Nevada turquoise takes a very good polish, giving the finished gem a lustre similar to jade.

For the past thirty years or more the mining of turquoise has been more or less active in the vicinity of Tonopah, in fact it was produced here before the town was founded. Recently new workings have been opened, old abandoned mines reopened, with a consequent increase in the production of good gem material.

The Nevada turquoise occurs in veins in sedimentary formations, most of the veins having a nearly vertical dip, with a limestone footwall. The turquoise in the veins associated with a light or dark colored shale gangue, some of the veins having a capping of quartzite. In some of the workings a clay is present which forms a "contact" along the foot wall, and it is in this layer of clay that the best blue material is found. A peculiar and unusual variety of turquoise, found

Open Cut and Stoped Out Portion of Royal Blue Mine, Nevada.

Bunker Hill Mine, Nevada—Incline to Mine.

very sparingly in some of the Nevada mines, is a light yellowish-white colored material, in which probably no copper or iron is present, or has been replaced by some other element.

It is safe to say that a great deal of the cheaper substances sold as turquoises are some cleverly made artificial materials. Instances have been known where common plaster of paris was mixed with some hardening agent and a dye and sold as the real article. Frauds of this kind however can be readily detected by the mineralogist. Sometimes inferior colored but genuine turquoise is dyed to improve the appearance; this fraud can usually be detected by rubbing with strong ammonia, the dyed material tending to fade, while the natural and unaltered turquoise is not affected by ammonia. A great many of the huge cheap masses of "turquoise" seen on the market are made by precipitating solutions of copper and aluminum phosphate, and the resulting

Blue Jay Mine, Nevada—Hoist and Part of Dump.

solid precipitate is compressed into compact masses by hydraulic pressure. The compressed artificial material, while resembling turquoise closely in composition, is usually of inferior color, less hard, lighter in specific gravity, lacking in lustre and does not have the fine net-

Blue Jay Mine, Nevada—Showing Head Frame.

work of matrix often seen in the natural material.

Turquoise should never be placed in soapy water, but should be cleaned with a little benzol then washed in ammonia water and finally dried with a soft cloth. The gem should be kept in a jewel box when not in use, as strong light tends to turn the blue varieties a greenish color. The green varieties are harder and do not lose their color as easily as the blue, but the former are inferior in value. Any acid substance or perspiration which has a slight acid reaction tend to turn the blue varieties a greenish cast, but this can be eliminated to a large extent by washing the gem frequently in ammonia water.

AMATRICE

—By—

H. E. BRIGGS
Kalispell, Mont.

Amatrice, perhaps better known to mineralogists as Utahlite, a variety of Variscite, is one of the most deserving of gems and yet one which has been more or less slighted.

Amatrice is a combination of variscite with various other minerals such as wardite, quartz, etc. Its color is green and mottled with various shades of grey, yellow, brown, reddish-brown, blue and black. The material somewhat resembles green turquoise in the matrix. However, it is seldom that turquoise is found in a matrix as colorful as the mottled colors of amatrice. The collective composition of the mineral or combination of minerals is somewhat difficult to express since it varies with the minerals in the combination. The composition for the predominating mineral, variscite, is expressed by the formula $AlPO_4 2H_2 0$; being a hydrous phosphate of aluminum.

Amatrice is so called from the fact it is distinctly an American matrix and its name is derived from the words—American and matrix.

Amatrice is not hard but will wear satisfactorily in beads, brooches, and even in rings if given reasonable care. The hardness ranges from 4 to 5 and the specific gravity is usually near 2.55. It breaks with a dull luster but when polished has a waxy to vitreous luster. The parts suitable for use as gem-stones must be free from flaws and very compact as the material contains considerable water and the more porous pieces usually crack with desication. The compact pieces naturally take a better polish and are more durable as well.

The finest amatrice produced comes from Nevada near Manhattan, but it is also produced in other parts of the State and in Utah. The mineral is not common and in fact is rather scarce. The fact that really fine gem material is difficult to obtain no doubt accounts for the gem not having received more attention in the past. It takes a beautiful polish and resembles blue turquoise so much that a large specimen (although difficult to find) is worth treasuring.

The value of amatrice is much like that of other semi-precious gems, variable to the extreme. A gem of this material when of poor or ordinary color is worth only a very nominal price but if it be of fine color and especially if of large size the price may be very substantial. The nicely mottled gems of good color are the more valuable. The pieces which are nearly pure variscite (clear green) are of much less value than the fine mottled stones.

The gem is opaque and consequently is usually cut en cabochon but has also shown itself adaptable to engraving. The author has cut many fine cameos from it and the mottled color makes it possible to obtain very striking effects in carved gems.

It is not at all surprising that many collectors specialize in polished agates. For agates come in such a wide array of patterns that no two specimens ever appear to be alike. Furthermore, they are cheap, take a beautiful polish and are common the world over.

THE ROMANCE OF CHINESE JADE

Its History, Technical Identification, and Appreciation as a Precious Mineral

—— *By* ——

WM. B. RUSSELL

The uses to which jade is put by the Chinese, and so great is their admiration of its qualities, it would demand volumes to describe them and the object of this brief outline is only to relate, as briefly as possible, a gem worthy of the highest place in the catagory of jewelry and art.

Chinese Jade, contrary to popular belief, is neither found within the boundaries of China proper nor was it originally named by them.

Jade like all precious stones, served mankind first as an amulet and was named by the Romans, who called it the "Kidney Stone", as it was believed to possess the power of healing or strengthening the kidneys. This belief spread all over the world, including the Aztcs of North America. The Chinese accepted jade universally and established further virtues to this mineral such as the belief that broth drawn from a ground jade solution would heal stomach disorders.

The toughness and durability of jade established its popularity as material for hatchets, chisels, hammers, and various useful implements including swords, and in some parts of the world jade was called the "Hatchet Stone".

While there are extensive collections of these ancient implements, one of the largest being exhibited in the Metropolitan Museum of Art in New York City, their origin is credited to the Chinese and East Indians.

The many merits accorded jade by the Chinese, who call it Yu or Yu Shih, led to its adoption as material for religious idols. Buddhism and Taoism both afforded fertile fields for the carving of images and symbols which are well known in the annals of art. The dexterity of the Chinese artisans, which has earned them world-wide fame, created a demand for jade carvings of every description, and with this demand was first established quality distinction in the material. Naturally, the rare colors, such as emerald green (King Fishure Jade) and the translucent apple-green colors were cut into articles of jewelry, and the less royal colors into artistic works of art and religious symbols.

The Chinese custom to celebrate all national, religious, and family events with a symbolical carving representing that event placed a qualitative distinction on the jade used for this purpose and the "Mutton Fat Jade" (the color of fresh lard) was the prize color. It can readily be seen that so extensive a use automatically placed a quality distinction on the mineral and the gem color for jewelry is the Imperial or Emerald Green and the clear translucent Apple Green, while the pure jade or "mutton fat" is in the gem class, it is more generally used for works of art than for jewelry.

Class distinction among the Chinese was established by the quality of their jade and the ancient Mandarins offered attractive premiums for jade of a specific color, offering land, food, and many other inducements in exchange. This bartering was so firmly established in China that you can still pay your bills with Imperial Jade. This in itself is one of the primary reasons for the precious classification of Imperial Jade and an assurance of its permanent place as a gem stone.

The extent to which this stone is prized by the Oriental cannot be exaggerated. The very symbol of ideaograph for King in ancient times was a series of three beads, representing a string of jade and this same insignia is used today by the Chinese of high rank.

Even in death the virtue of jade is honored and can be considered as having immortal powers as regards their belief that a piece of jade placed in the mouth of a deceased will serve as his fresh, or (green heart) as they call it, and is supposed to contain the spirit of their mortal heart. Here, also, a class distinction is made as the quality of the jade placed in the mouth of the deceased depends upon the station that individual held in life. The Metropolitan Museum of Art contains some three hundred pieces of jade

taken from the tombs of ancient Chinese, most of which are discolored due to the chemical reaction with the bodies as well as the obsorption of some of the decomposed products in the tombs.

A most interesting early use for the stone was as a musical instrument or chime. A series of slabs, oblong in shape, varying in thickness only for their tonal qualities, were used extensively and many have called it the "Musical Stone", as jade seemed to possess better tonal qualities than the stone instruments then in use. There are two kinds of instruments, one of which was used for religious ceremonies, and the other of a higher pitch was called the "Singers Chime". Confucius was very fond of Singers Chime.

While convential designs by the Chinese artists are primarily the result of commerce, as stated previously, the majority of carvings symbolize an event, a principle, or a legend. For instance, most every one has seen the beautiful butterfly carving, originating from the legend of the young Chinese boy, who, while chasing a butterfly, ran into the garden of a Mandarin, met his beautiful daughter, and later married her. The significance of this carving is a successful marriage.

Another universal legend with the Chinese is the carving of a bird called by them the "Phoenix". This symbol is given the Chinese girl when she becomes of marriageable age, or at such time as her father wishes her to marry, as an identification that she is qualified for this event. Customarily the young lady will display the Phoenix in a very prominent place to attract the eye of any prospective young man.

There are as many fascinating stories relating to this ancient mineral as there are qualities, and no gem can boast such a comparison. A very commercial piece may be had for a few cents, yet a gem stone may command thousands of dollars.

Source of Raw Material, Mineralogical Contents, and Identification of Chinese Jade

While jade of the commercial variety has been found in many parts of the world, including North America and New Zealand, there are only two sources in the world of any consequence and it is from these sources that practically all of our present jade originates.

Jade is a mineral, and while there are two distinct minerals, technically termed Jade is so firmly established that it would serve no good purpose to try to displace nephrite and jadeite, the name Chinese this thoroughly-accepted word. However, for the purpose of discriminating between genuine jade and the many other minerals, often indiscreetly sold as jade, a mineralogical description is tabulated below.

Nephrite

COMPOSITION: A mineral. Principally magnesium, calcium, silicate ($Mg_5CaSi_4O_{12}$).

CRYSTALLIZATION: Monoclinic.

COLOR: White when pure; rare qualities comprise varied shades of green; also abnormal impurities are shades of grey, brown, and red.

LUSTER: Vitreous, translucent.

HARDNESS: Varies 6 to 6.5.

SPECIFIC GRAVITY: 3.00.

REFRACTION: Double 1.61.

Nephrite is accepted as true jade by the National Association of Mineralogists.

Jadeite

COMPOSITION: A mineral. Principally sodium, aluminum, silicate ($NaAl(Si0_3)_2$).

CRYSTALLIZATION: Monoclinic.

COLOR: White when pure; varied colors of green and browns owing to presence of iron silicates.

LUSTER: Vitreous; opaque to translucent.

HARDNESS: Varies 6:5 to 7.00.

SPECIFIC GRAVITY: 3.35.

REFRACTION: Double 1.67.

Universally accepted as jade.

Nephrite is found along a small river in the Karakash Valley, Turkestan, where it is picked up along the banks and also taken from the river bed. This is the source of the finest jade today.

Jadeite is found in the Mogoung district of upper Burma. Jadeite is mined and there are only two mines operating in Burma. One is operated by a British syndicate, the other by Chinese.

As to the distinction between the two minerals, nephrite and jadeite, physically; jadeite is granular in construction while nephrite is splintery. Most jadeite is opaque and most nephrite translucent. However, where identification is doubt-

ful, scientific apparatus is the only alternative.

The destructive method of identification, while impractical commercially, is very definite. Jadeite fuses readily before the blowpipe, coloring the flame a bright yellow, and melts to a crystalline glass. Nephrite is not attacked by acids and fuses with difficulty, leaving a grey slag. Strangely enough, jadeite is the harder and heavier of the two stones yet not nearly as tough or durable.

The routes to the cutting markets which are Canton, Peking and Shanghai, are principally overland by camel train or on the backs of natives, a long tedious grind. Some, however, is transported by steamer in the case of the British operators to Hong Kong, from whence it is sent to the above mentioned cutting markets.

Curiously enough, the rough material is broken open by the age old method of building a fire on the surface of the pieces, causing it to crack open on cooling rapidly.

The auctioning of the rough is extremely interesting, even though it is not operated today by the handshake method in vogue many centuries ago. The bidding is blind, and a very hazardous gamble at that. The rough is handled by the keeper of the block and each cutter places his bid on a piece of paper underneath that piece of rough. A set time is made at which the bids are examined and, of course, sold to the highest bidder. In cases where a particular piece appears to be worth more than any one cutter could dare to gamble on, a pool is gotten up, each one assuming a portion of the bid. Often, different groups of cutters will pool their bids in the case of fine pieces. Color is the premium and although the bidders are experts, the eye of man cannot accurately ascertain the depth of the color grain, nor how even in color that grain may be, hence, costly mistakes are frequent.

The grading of the finished pieces is done very carefully, and only at daybreak, before the sun has an opportunity to cast reflections or illusions to the optic nerves. The graders are very religious about this and insist that their eyes have had a good rest before attempting the task of valuing gems on their merit.

Many have wondered why an ornamental carving, suitable for jewelry, of a given quality and workmanship, brings less in the market than a plain, smooth cabochon piece of the same color, and perhaps much smaller. The answer is apparent when we realize that the designs on the carved pieces are arranged so as to eliminate the least desirable color, which, of course, is not possible in the case of a smooth piece.

Color, that is the premium, color and translucency are the requisites of the gems. The translucency supplies the life, while that particular shade of green, dear to the hearts of the Oriental, is the premium—JADE GREEN.

The diamond, the emerald, in fact all precious stones are prized by their rarity, beauty, luster, and romantic virtues, yet what gem can demand a greater premium than Imperial (King Fishure) Jade.

MINERAL FAKES

—By—

JOHN A. RENSHAW

1038 *Baldwin Ave., Arcadia, Calif.*

In the study of mineralogy and the collection of mineral specimens, accuracy and the correct determination of specimens should be the ultimate goal. Every collector, and particularly if he is a member of a mineralogical society, should try, as best he can, to get the proper determination of his specimens and he likewise should discourage and expose the false classification of specimens when such has been intentionally done as is, unfortunately, oftentimes the case. Right now I want to expose a few false determinations which have come to my attention.

Perhaps some of you have been offered in trade or for sale some fine looking specimens which were represented as being beryl, aquamarine, obsidian aquamarine, transparent obsidian, and what not. These may range from the size of a pea to a piece weighing twenty-five pounds or more. At first glance they look what they

are purported to be and if they were only genuine they would be very valuable indeed. Inclosures of round, opaque formations, apparently crystallizations of some kind, add to their interest and possibilities. In color they may range from sea-green aquamarine to white, green, blue, porcelain, and black with red stripes. Some of the latter pieces look identically like the genuine red and black obsidian. The bulk of the specimens are of the aquamarine color. Now all of these specimens are nothing but **glass.** These glass specimens have been passed around so much as genuine articles that I think it is about time they were exposed as fakes.

At Hermosa Beach, California, is an abandoned glass factory and on the floors of the kilns are tons of glass. On the dumps outside a sapphire-blue glass is found, generally in small pieces, which has been passed off as a mineral called "Hermosolite." If you have any hermosolite in your collection check up on its authenticity as it may be this glass. If you have been fooled with this fake mineral do not feel badly about it as many good men have likewise been taken in. I know lapidaries who, with no intentions to deceive, have accepted the word of their suppliers of this glass that it was genuine and have cut and sold many sets as aquamarines, sapphires, etc. A curator of a museum showed me a specimen of a beryl but it turned out to be this glass. The curator is not a mineralogist but, being anxious to maintain accuracy in his museum, was very thankful for the correct identification.

Here in the Los Angeles district of California, during the summer of 1930, when the miniature golf craze was at its height, a considerable amount of colored glass was used for decorative purposes, the very same stuff which had been passed off on collectors, dealers, and lapidaries as genuine gem material.

A word about glass arrowheads may not be out of place at this time. Have any of you ever seen one of those transparent red arrowheads? They are very pretty. I know one person who valued his so highly he used to keep it in a safe deposit box and still keeps it well hidden, bringing it out only on occasions when he wants to show his friends a genuine "ruby" arrowhead.

These arrowheads have been represented as being made of transparent red obsidian, garnet, ruby, and spinel but they are all glass and of modern make.

The making of arrowheads is not a lost art as many believe. Mr. Joseph Barbeiri of Pasadena, Calif., is a recognized authority on this subject and the ones he makes are surpassed by none, not even the best of those made by the Indians. Mr. Barbeiri has examined many of these transparent red arrowheads and has pronounced them all glass. It may be that many of them were made by Indians for profit but they are not what is termed a genuine Indian relic. At the time Indians were making arrowheads for their own use it is doubtful if they had any red glass or even knew of it.

The writer is keenly interested in obsidian and is anxious to obtain a transparent red or white piece if possible. Specimens represented as such have been seen but when traced down to their source have proven to be fakes. If anyone reading this article knows of a genuine red or white transparent obsidians he would be conferring a favor upon the writer in bringing it to his attention.

Transparent green obsidian, resembling an emerald, is another color often heard of but never seen.

Please bear in mind the writer has no criticism for the man who unintentionally classifies a mineral wrongly. All who have tried to determine minerals know only too well that such work is not the easiest thing in the world. Even those most expert err at times. It is the man who intentionally labels a mineral wrongly that is open to censure.

Jaspers are common around Peekskill, as pebbles and boulders in glacial drift, and occur in three colors: brown, red and yellow. Yellow jaspers are most numerous and often come in sizes weighing many pounds, while the red varieties are rarest and smallest.

Jaspers are varieties of quartz and take a beautiful polish.

The finest specimen of jasper ever to be recorded from Peekskill, N. Y., was found on June 29th, 1932, by Peter Zodac. The specimen is deep red in color, weighs four pounds, and is a water-worn boulder. It was found in glacial drift at Depew Park when the athletic field was being graded.

Field Museum Notes and News Items

Contributed by

THE FIELD MUSEUM OF NATURAL HISTORY

Chicago, Ill.

The largest collection of ores of heavy metals, building stones, and non-metallic minerals on exhibition in Frederick J. V. Skiff Hall at the Museum have been reinstalled, the revision including the addition of much new material, and the improvement of methods of display. To assist students and other interested individuals, more complete information labels have been provided, and many cases have been equipped with maps showing the distribution of the materials.

A special exhibit of specimens of the rarer of the elements composing the crust of the earth has been placed on display in the department of geology at the Museum. Efforts to complete the collection are now under way, but it may take years because of the extreme scarcity of many elements. The exhibit, which is in Frederick J. V. Skiff Hall, is designed to provide facilities for study of the subject such as are not ordinarily available to the average student or other individual interested, owing to the difficulty of obtaining material. Herbert C. Walter of Chicago is cooperating with the Museum in the work of assembling further specimens.

"The crust of the earth is composed of 92 known elements," states Henry W. Nichols, Associate Curator of Geology, in charge of preparation of the exhibit. "Eight of these account for more than 98½ per cent of the crust. Only iron and aluminum among the heavy metals are included in those eight. Of the other 84 elements, only 5 are present in quantities greater than one-tenth of one per cent. The remaining 79 elements together comprise less than one-half of one per cent of the mass of the earth's crust. Most of the useful metals, such as copper, silver and zinc, are included in this half per cent, and most of them in quantities of less than one-hundredth of one per cent.

The quantity of gold present in the crust of the earth has been estimated as one-half of one-millionth of one per cent, yet gold is not included among the really rare elements being assembled in this collection. These exist in even smaller quantities. Some of these have such remarkable properties that in spite of their rarity and necessarily high price they have come into regular use, as for example radium and helium, the first of which is represented at the Museum by several specimens of radium ore. Others, as for example, the exceedingly rare tantalum, are used whenever a supply can be found, while still others not now utilized will probably be found useful in the future."

A mass of "float copper", weighing seventeen pounds, has been presented to the Museum by Carl Pickhardt of Chicago, who found it in a field near Columbus, Wis. Float copper does not occur in mines, but is found in soil or gravel, and is widely distributed through the middle western states, according to Dr. Oliver C. Farrington, Curator of Geology. Aside from its intrinsic value, float copper provides excellent material for study in connection with the subject of glaciers and glacial movements. It is of interest also as a source of metal which was used by the Indians in various manufactures.

Float copper originated in the copper fields of Keeweenaw Peninsula, Mich., and was distributed over the middle west by the glaciers, says Dr. Farrington. As a rule, surface markings are so well preserved that even small glacial scratches are retained. The widespread occurrence of this copper affords a means of tracing glacial movement.

Skulls of Macrauchenia, a rare species of tall camel-like prehistoric animal of South America, has recently been placed on exhibition in Ernest R. Graham Hall at the Museum.

Although this animal strongly resembles a camel superficially, it is not directly related to the modern camel, according to Elmer S. Riggs, Associate Curator of Paleontology at the Museum. It is likewise not related to any modern animal of the entire world, nor to any other animal either modern or prehistoric, known from North or South America, Mr. Riggs says. It thus occupies a unique place in a series of early animals, and in the study of evolution.

The specimens were collected in Argentina by the Marshall Field Paleontological Expedition to South America, which was led by Mr. Riggs.

What are believed to be the two longest pieces of rock core brought from great depths in the earth by mining drills used in prospecting are on exhibition in Frederick J. V. Skiff Hall of the department of geology at the Museum.

Prospecting for mineral deposits is largely done by diamond drills, which consist of a rotating pipe armed at its lower end with diamond teeth, it is explained by Henry W. Nichols, Associate Curator of Geology. The teeth grind a ring of rock, leaving a central core which passes into the pipe and can be raised for study. The drill cores at the Museum have attracted much attention from mining men on account of their length.

Although records of the rock passed through in thousands of feet of drilling are often secured, the individual pieces of core are usually short, due to the brittleness of rock. One of the cores in the museum, a cylinder of limestone six feet seven and one-half inches long and two inches in diamemter, was drilled from a depth of 670 feet at Waltonville, Illinois. This was thought to be the longest bit of core ever taken out in one piece until the Museum received a longer piece from Colorado, the latter being a granite cylinder ten feet long and two inches in diameter. These cores illustrate how mining engineers can learn facts about what may be found at great depths in the earth in a certain locality before going to the expense of making large scale excavations.

NEW CHICAGO HOBBY SHOW

At the National Hobby-Collectors' Show to be held November 16, 17, 18, and 19, Sherman Hotel, Chicago, will be exhibited collections of stamps, coins, Indian relics, firearms, antiques, autographs, books, prints, and other collectors' items. Sponsors of the show are planning it to be the largest ever held, and believe new attendance records for shows of this kind will be set during its duration. Radio and newspaper advertising will be used. Members of the advisory committee are as follows: Mary Ann Dicke and E. H. Blinstrub, antiques; Rollo E. Gilmore, coins and paper money; Robert Wootton, Indian relics; Henry Morris, firearms; Norman Picht, Postage stamps; Mrs. Eveleen Severn, of Severn, Wylie, Jewett Company; and O. C. Lightner, Lightner Publishing Corp. The following organizations have also pledged their support: Women's Stamp Club of Chicago; Chicago Coin Club; Fort Dearborn Philatelic Association; and the Precancel Society.

CONGRATULATIONS! RHODESIAN MINING JOURNAL, ON YOUR FIFTH ANNIVERSARY

The June, 1932, issue of **The Rhodesian Mining Journal** commemorated the Fifth Anniversary of South Africa's largest and most popular mining magazine. That **The Rhodesian Mining Journal** is serving a useful purpose in disseminating information on mining and geological conditions in the Province and is recognized as an authority on these subjects can best be shown by its large circulation, not only throughout South Africa and in other sections of that vast Continent but throughout the world as well. Published at 43-44 Calcutta House, Cor. Loveday and Anderson Sts., Johannesburg, South Africa, this very interesting magazine has already carved for itself a niche in the hearts of mining men.

Congratulations! **Rhodesian Mining Journal,** on your Fifth Birthday! May you live to a ripe old age and may you grow stronger, wiser, wealthier and more popular with each future birthday is our sincere wish.

The Amateur Lapidary

Conducted by

J. H. HOWARD*
504 Crescent Ave., Greenville, S. C.

Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all.

*Author of—*The Working of Semi-Precious Stones.* A practical guide-book written in untechnical language for those who desire to cut and polish semi-precious stones.

RANDOM COMMENTS

In the July issue of *Scientific American* an invitation is extended to Amateur Lapidaries to send in photographs and descriptions of their work, and such notes as they wish, pertinent to the subject of gem cutting. The magazine kindly offers to give us "nuts" a full page, if we will send in sufficient interesting text and photographs. It is a wonderful opportunity for the amateur to get public recognition of his work and to meet other interested workers. We hope the *Scientific American* will be "snowed under" with photographs of gems and equipment for cutting gems. Your photographs should have a glossy finish. Their address is 24 West 40th St., New York, N. Y.

Do you find the Amateur Lapidary department worth while? Do you prefer to have it continue, or would you rather have this space used by some other feature? The purpose of this magazine is to interest its readers. Better tell the Editor now of your wishes for we do not want to continue a feature that is not of general interest.

You may have some trouble with stones breaking loose from the stick, especially when using an internal grinder that has become worn untrue and bumps the stone. When the stone is warm take a stick of shellac and warming it to the melting point, wipe it across the back of the stone, and then attach the stone to the stick. If you do not have stick shellac, ordinary liquid orange or white shellac may be "painted" on the back of the stone with a brush, while the stone is hot. Let it stop bubbling, then attach to the stick. Or use hard engravers cement, (price 90c plus postage for ½ pound). Get it from Wm. Dixon, Inc., P. O. Box 593, Newark, New Jersey.

Several amateurs have asked what material we recommend for cutting, and were it can be gotten. For practice, stick to agate. It is cheap, it is beautiful, and is of the right hardness for practice material. When one has learned to finish agate, he will not have much trouble with other stones that are cut cabochon. It happens that, in general, the stones harder than agate are cut with facets, and we are not concerned with them at present. To lend color and variety to the cabinet of cut stones after you have gotten a background of agates, we suggest the following:

Jasper in red, green, yellow or banded. Buy from Ward's or The Gem Shop, or John C. McCorkle, 114 Spruce St., Needles, Calif.
Chrysoprase. Buy from McCorkle.
Opal. From N. H. Seward, No. 567 Bourke St., Melbourne, Australia.
Malachite and Lapis. From the Gem Shop or Ward's.
Turquoise, both blue and green. From Roy Palfreyman, Sulphur, Nevada.
Rose Quartz (specify for gems) Scott Rose Quartz Company, Custer, South Dakota.

In the meanwhile get price lists from both Gem Shop and Ward's.

You will want to learn something about the stones you are working with and there is no better treatise on this than "Gems and Gem Materials" by Kraus & Holden. Can be gotten from the publishers, McGraw-Hill Book Co., 330 W. 42nd St., New York, N. P. Price $3.00.

Some of us find splashing very troublesome, especially with the oil mix used in sawing. There are two general ways of handling this—one is to control it, sometimes at the price of considerable trouble. The other way is to "forget it." Some of our correspondents have devoted considerable thought to the subject, and exercised much ingenuity in overcoming the trouble with shields and baffle plates. The writer belongs to the "forget it" school, which holds that the game is not worth the candle—that the better scheme is to control this splash only reasonably well. Then set a shallow tin pan (home-made) where it will catch the splashed mix, dress with a full length oil cloth apron, and wash up with gasoline at the conclusion of the job. Caution: Gasoline is dangerous, handle it carefully. It is well to keep it in a jug, and keep it outdoors, if possible. At any rate, well away from your work. But its about the only way to clean up after sawing.

An occasional trip to the Ten Cent Store is worth while. You will find there "Gresolvent" for washing the hands. Five cent frying pans for melting cement. Two gallon galvanized or enameled pails for water. Many small tools that you will want. Enameled pans for various washing operations, including washing the stones in gasoline after sawing, and also when they are taken off the stick after the final polish.

Some of the softer stones do not polish as well as we might wish, using the regular routine of pumice and hard felt and tin oxide and hard felt. This operation is likely to prove especially troublesome with such stones as turquoise in matrix or other material where there are bands or spots of "loose" material or of softer material. In the case of turquoise in matrix, the felt wheel drags loose some grains of the matrix material, which scratches the turquoise. This trouble can be almost entirely eliminated by finishing on a buckskin faced lap charged with paste of water and Opticians rouge.

While this operation is necessary on some soft stones, it will be found worthwhile on all stones up to and including agate. The writer keeps two such laps. One with the sheet of buckskin tacked against the side of a flat wood wheel for polishing flats. The other is tacked against the side of a wood wheel in which a groove has been turned. The groove may be about ¼" deep by 1" wide. This wheel is for polishing curved surfaces. Keep the buckskin well doped with the rouge paste or it will heat the stone.

How do you display your cut stones? A suggestion. Get a cigar box. Saw the four sides to make of the bottom a tray about ½" deep. Scrape off all paper. Lacquer any attractive color. Drive a tack or a screw into the inside of the bottom about ¼" from each corner, and with the heads ⅛" below the sides of the tray. Get from a glazier a piece of ordinary window glass cut ⅛" smaller each way than the inside of the tray. Use this as a cover, letting it rest on the tacks or screws. Get absorbent cotton in rolls. Cut to fit and fill the tray. Lay the cut stones on the cotton bed and put on the glass cover plate. Several of these can be used as drawers in an enclosing cabinet that you can make of wood. Have the cotton thick enough to hold the stones up against the glass, so they will not slide about.

The Corundum gems; ruby, spinel and sapphire are almost identical except in color. They are next in hardness to the diamond. They are found not only in red and blue but also green, violet and yellow, and are sold under the names oriental emerald, oriental amethyst and oriental topaz.

Flawless rubies are seldom larger than 3 carats. Those of as much as 10 carats are among the rarest and most costly of gems. Sapphires, which are similar stones except in color are found in immense sizes. There is one cut sapphire of 951 carats and stones weighing from 1 to 2 pounds have been found in Ceylon.

Interesting Localities and How to Reach Them

THE ELLENVILLE MINE

——*By*——

MISS MURIEL J. McADIE

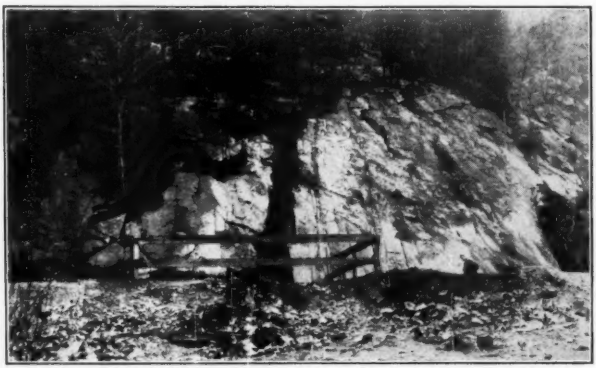
Peekskill, N. Y.

The Ellenville lead mine, once famous for its very fine quartz specimens, may soon be but a memory as it has long since been abandoned. Interesting little quartz crystals are still to be found loose in the dirt surrounding the old shaft.

At the railroad station, the visitor has a splendid opportunity to view huge slabs of crystals, which range from the clear to the milky variety. Some of these crystals are six inches in length and have good terminations. These slabs, many of which are the finest from the mines, are arranged around a shallow mill stone, and form the base for a fountain. A pyramid of these crystals, erected in the middle, permits the water to tumble down in a sparkling cascade.

Just north of the station and next to the tracks, lives an old man who acted as guide to the visitors of the mine when it was in operation. He delights in telling humorous stories about the mining days, and told us that specimens are difficult to get now, because all the material was carted away, leaving very little waste, so that the dump is now conspicuous by its absence. The trip to the vicinity is incomplete without talking to this man.

The mine itself is just one-half mile east of the above-mentioned railroad station at Ellenville, Ulster County, New York, and is easily reached. Canal Street is the first street south of the station. Go east on this street, across the railroad tracks, and turn left and then right as it winds around. Broadhead street will be passed on the right and about 100 feet further a dirt road on the left leads off to the mine 300 feet away.



Courtesy of Ramon Conover.

ELLENVILLE LEAD MINE

The black streak in center marks outline of former vein. Note board railing around the old waterfilled shaft.

The Collector's Workshop

ROCKS AND MINERALS would be pleased to have its readers contribute short notes from their experiences to this department.

VOORHIS PROSPECTORS' CLUB MINERAL TRAY CABINET

—By—

HEBER H. CLEWETT

Voorhis School for Boys, San Dimas, Calif.

The accompanying photograph shows a cabinet holding a single tier of thirteen trays. The height is three feet, which permits economical cutting of lumber. Soft pine is the best material to use because it is easy to work and does not split readily.

The bottom tray rests on the bottom board of the cabinet. The rest of the trays slide on cleats, ⅝" x ¾" x 12", which are fastened to the sides of the cabinet with screws.

The back of the cabinet may be left open, covered with thin ply-wood or heavy cardboard, or provided with a thin wood strip, about ¼" x 4", nailed vertically at each edge. The latter is perhaps the simplest and best, as it serves to brace the cabinet and to provide stops for the tray-drawers. These strips are shown in the photograph.

If desirable, holes may be drilled and dowels inserted in the end of the cabinet, as shown in the photograph, to hold one or more mineral picks. An easily applied coat of rub-on walnut stain will improve the appearance of both cabinet and trays.

Mineral Trays

Mineral trays, made as described below and as shown in the drawing and photographs, have greatly simplified for the Voorhis Prospectors' Club the problem of arranging, displaying and storing their amateur collections.

Dimensions are shown in the drawing. Each tray is 12" x 20" outside measurements and the depth is 1¾". There are 28 compartments, each approximately 2½" square, made by inserting cardboard partitions into the saw-cuts, or slots made in the sides and "fence" strips. It is quite an advantage to have these cardboard diments or 11" x 19" inside measurements,

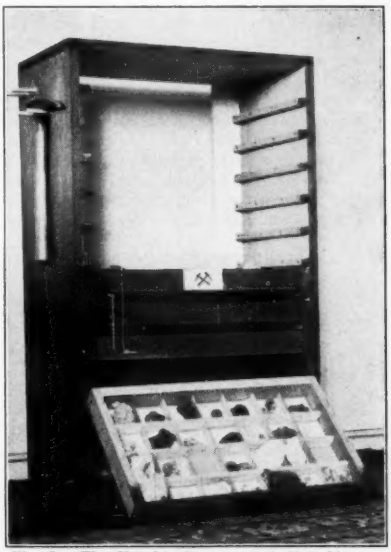


Fig. 1.—The Voorhis Prospectors' Club Mineral Tray Cabinet, made to hold 13 trays.

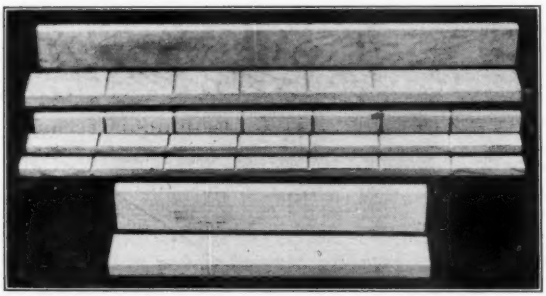


Fig. II—Parts of Mineral Tray, ready to nail together. The two top strips are the side pieces, ½" x 1¾" x 20". The next three are the "fences," 1/3" x 1¾" x 19". The two bottom strips are the end pieces, ½" x 1¾" x 11".

vision pieces fit snugly, and it works very well to cut heavy cardboard, ⅛" thick, into long strips ¾" wide and then cut into pieces, after the tray is ready for them, so that each one fits accurately. They are of course removable when it is desired to adjust space for a larger specimen.

The same kind of heavy cardboard is used for the bottoms of the trays, and may be obtained at any print shop. For a small additional amount they will cut it to the required size more accurately than could be done with knife or scissors. The size of the bottom cardboard is of course 12" x 20". It is nailed to the sides and ends with 1-penny nails, and to the "fence" strips with ¾ x 18 flat head wire nails. Nails from discarded cigar boxes will do nicely for this. Frequent nailing makes for a sturdy tray.

These trays are light, sturdy and cheap, and have proven very satisfactory, especially when used as drawers in a simple home-made cabinet which has already been described. A circular saw is a great aid in their construction, but not essential. Any boy or girl can make them if he or she has a saw, square, hammer and plane, together with the material, which because of its small dimensions, may be scrap lumber. Soft pine is the most easily worked and the least likely to split.

Staining the trays on the outside with mahogany or walnut stain improves their appearance. Mineral identification cards may be placed in the bottom of each compartment, under the specimen. Slightly bending up the corners of these specimen cards will prevent their tendency to slip under the cardboard partitions.

For anyone who would prefer to buy these trays, rather than to make them, the Voorhis Prospectors' Club is prepared to furnish VPC Mineral Trays, made as described above, in any quantities. Prices will be furnished on request.

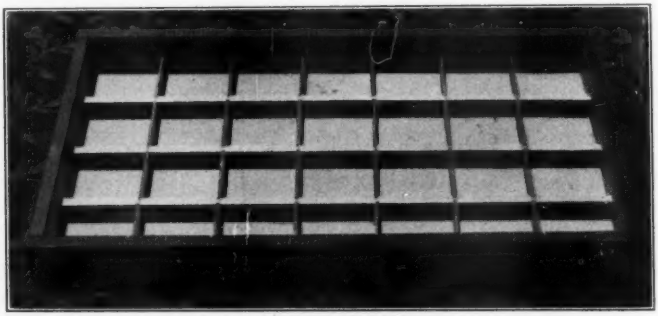
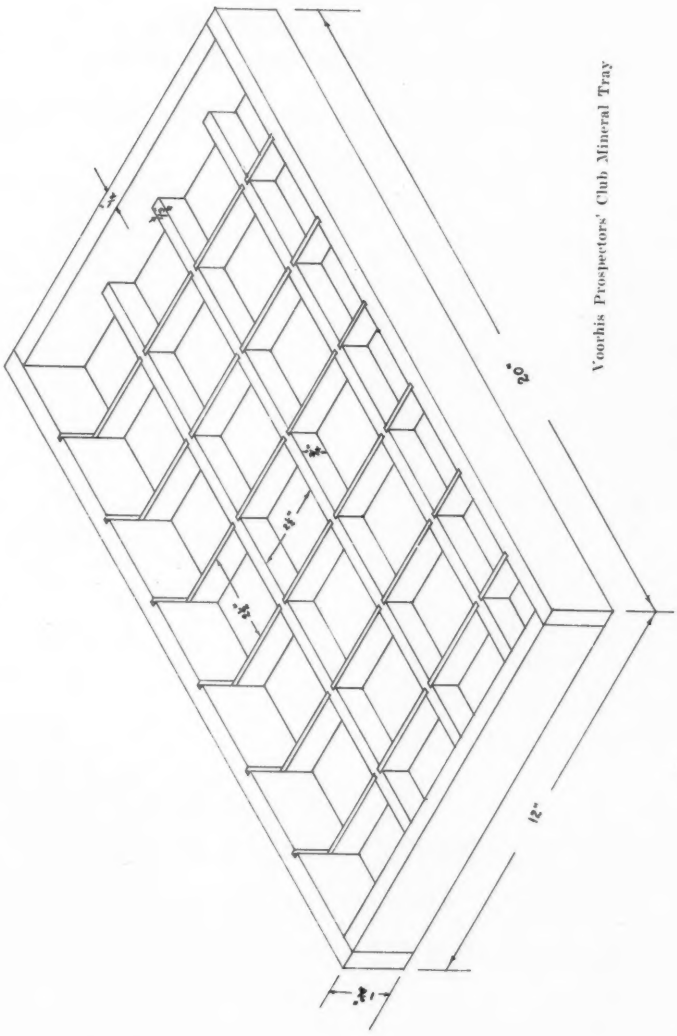


Fig. III—The Finished Tray.



Voorhis Prospectors' Club Mineral Tray

Our Junior Collectors

Some Day They May Be Our Leading Mineralogists

RUTH HARDAWAY

Ruth Hardaway in front of the glacier's "wastebasket," as the "YG's" affectionately call a terminal moraine.

Kansas City has two distinctions to fame: one, it lies on the border line of two states so that part of the city is in Kansas and another part in Missouri; and, second, it is the home of Ruth Hardaway, a little 12 year old girl. Now everybody hasn't heard of Ruth. Even in her own city there are many who do not know she resides there. This is due to the fact that Ruth is so busy hunting for rocks, minerals and fossils or exploring terminal moraines and other geological features that she has no time for parties, entertainments and social gatherings in general. So under these circumstances how can the people find out what a bright and sweet little girl dwells amongst them.

That Ruth is a keen and active mineralogist can best be shown by her achievements. She has visited and explored a large number of localities throughout the West and particularly limestone quarries and terminal moraines in and near her city. She has organized the "YG's" (Young Geologists), a group of seven little friends who are now keen and active collectors, and her collection of rocks, minerals and fossils is so extensive that a list of them recently sent us looked like an inventory of specimens in some large museum. Yes, indeed, Ruth is a real mineralogist.

And isn't she interested in ROCKS AND MINERALS! Not only does she read each issue from cover to cover but generously passes them around among her friends. And she has obtained for us a new subscriber, too.

Those who may like to write to this "YG" and to obtain information on terminal moraines or perhaps to exchange a few specimens—we think she may be interested—can reach her as follows: Ruth Hardaway, 4432 Summit Street, Kansas City, Mo.

The first occurrence of asbestos to be reported from around Peekskill, N. Y., was found in April, 1932, at Montrose Heights by F. J. McTanney. The specimens are of the serpentine variety with fibers 10 inches long but the fibers are not silky and delicate.

The specimens were found in glacial drift on the property of Mr. McTanney. Credit is due Mr. Henry Thurston of Montrose, N. Y., for reporting the discovery.

Ideas and Suggestions

SENT IN BY READERS

Mr. Thomas W. Fluhr of Long Island City, N. Y., one of our popular contributors, made a suggestion not so long ago that efforts be made to secure the cooperation of readers in preserving books, bulletins, pamphlets and magazines covering mining, geology, mineralogy, etc. Publications of this nature are of much scientific interest and value and should be preserved and not thrown away or destroyed.

Those of our readers possessing material of this nature and for which they have no use for are urged to mail them to ROCKS AND MINERALS. We can make good use of this material and would be glad to receive any our readers may care to send us.

Mr. Eugene W. Blank, recently appointed Scientific Editor of ROCKS AND MINERALS, is at present engaged in preparing a comprehensive survey of diamonds found in the United States. Any information communicated by readers of ROCKS AND MINERALS concerning individual finds of diamonds will be greatly appreciated by Mr. Blank. Please address all information to Mr. E. W. Blank, 241 N. Ninth St., Allentown, Pa.

Fred W. Schmeltz, one of our most popular and active members and who has been induced to accept the appointment as permanent director of outings, sends in a suggestion which should be of interest to all members. He believes outings should not be restricted to those residing in or near New York City or Peekskill but should be a national affair. He writes:

"If a member or group of members in each state were to volunteer his or their services as assistant directors of outings, plan and arrange programs for visiting localities that would be convenient to members residing in their respective states and these outings all held on the same day, then indeed would a Rocks and Minerals Association Outing be a national affair."

We are heartily in accord with Mr. Schmeltz's suggestion and feel a National Outing will meet with the warm approval of all members. And what is still more important, a national affair of this kind should be a great boost for the fascinating study of mineralogy and the collection of mineral specimens.

Members who are interested in cooperating with Mr. Schmeltz are urged to write him and be registered as Assistant Directors for the 1933 Outing and all those appointed will be listed in ROCKS AND MINERALS (in the March issue) so that members in their respective states may write them. Send your applications in early to Fred W. Schmeltz, Director of Outings, 2510 Maclay Ave., New York, N. Y.

We also feel the outing can be enlarged to include foreign countries as we have members all over the world.

Who will be the first member to register as Assistant Director?

On the property of Fred Ingold, at Montrose, N. Y., a well was recently sunk 65 feet by a core drill. Eight minerals were identified in the cores: biotite, calcite, garnet, limonite, pyrite, pyroxene, quartz, and talc.

This is an instance how minerals can often be found in places where surface indications are not very promising.

Sidelights on the Outing

Fourteen states were represented at the outing, New York claiming first honors with 58 representatives; New Jersey second with 24; while Connecticut, Maryland and Ohio were tied for third place with three each.

Peekskill led the cities with 12 representatives; Brooklyn and New York were tied for second place with 10 each; while Burlingham and Tuckahoe of New York and Upper Montclair, N. J., were all tied for third place with 4 each.

There were 31 members and 70 non-members present for a total of 101. And weren't the women well represented!—42 of them to 59 of the men.

Dr. Bertha Chapman Cady had the distinction of bringing the largest number of friends—24—all girl scouts. Watson Crossman was next with 7.

Did you notice how the girl scouts hung around James F. Morton? He was kept busy all afternoon identifying "finds", answering questions, and—seemed to enjoy it too. And then **some** men have the nerve to say there is no pleasure in collecting minerals!

The cloud of dust which hovered over the landscape, creeping slowly from one dump to another, indicated at all times the exact presence of W. H. McClelland. And how he was enjoying himself!

Those collectors who trekked to Beechy Bottom are indebted to Mr. McClelland for all their biotite crystals as he it was who dug them out of the pocket and placed them at the disposal of all present. Incidentally, one of the boys with him obtained here the finest specimen of the day. It was a graphite crystal in matrix and one of those specimens which makes a collector hold his breath when viewing it.

Not many collectors knew a representative of the press was with us. But one was there. And Donald Albertson gave the outing a nice write-up in the June 27th issue of **The Peekskill Evening Star.**

Did you notice the array of talent in the New Jersey delegation? If ever a "Who's Who in Mineralogy" is published these names will appear on the first page: Marshall M. Algor, Bernard J. Borneman, E. F. Brooke, Ernest G. Fifield, Vincent Giordano, Leonard A. Morgan, James F. Morton, Louis Reamer, Jay A. Weber and Arthur E. Woods.

How we amateurs trembled when this mighty horde of experts took to the field!

G. Malcolm Andrews and Roy McCreary were the two youngest members of the Association at the outing. Where collecting was the thickest, there were these youngsters and they were holding their own against the veterans at that. We shall look forward in years to come to great achievements in the mineralogical field by these two very promising young mineralogists.

Miss Muriel J. McAdie and Emmet Doherty were the first two collectors to have their "finds" recorded.

Some one once made the statement that "It's the quiet fellow who needs watching." If this is true then John Butan, M. Elliott, Jr., Stanley Harzfeld, Lawrence Sidebottom, Joseph J. Stegle and Peter Thein must have each taken home a truckload of fine material. These gentlemen, all seasoned collectors, did not have much to say, but—Mr. Sidebottom sent in a list of what **he** collected and it read like an inventory of minerals in the National Museum.

Little Miss Doris Allen, age about 5, and her sister, Miss Marie, a few years older, were the two youngest "collectors" present. It was a joy to see these little girls at the outing.

We tried our best to follow Thomas W. Fluhr around for the purpose of picking up some pointers on geology. But it was no use. We were soon exhausted and had to give it up. At the next outing we

shall engage the services of a Marathon runner to do this for us, but, on second thought, who ever heard of a Marathon runner who could write in shorthand?

Misses Helen Wright and Gertrude Schmidt arrived somewhat late but they were there.

The first two members to report for the outing were Mrs. Grace Beckwith and Leonard A. Morgan. These interested collectors arrived in Peekskill on the 25th, where they spent the night. Incidentally Mrs. Beckwith was accompanied by her sister, Miss Annie M. Street (not present at the outing) and they were so charmed with the little city that they remained over three days.

And wasn't Peekskill well represented! Why, this little city stood out like a house afire on a dark night. It led all cities not only in the number of collectors present but in number of members as well.

We looked in vain for the appearance of James G. Manchester. A gentleman of most pleasing personality, an active collector, and one who takes great interest in assisting beginners—his absence was keenly felt and deeply regretted by his many friends present.

It was gratifying to see Mr. and Mrs. John A. Grenzig at the outing. Mr. Grenzig is the well-known mineral dealer of Brooklyn and very popular with mineralogists.

We wonder why some more of the "Who's Who in Mineralogy" were not present. Joseph F. Burke, Ramon Conover, Anthony Esposito, Gerard Fountain, Jr., Miss Lillian Fraser, Erwin F. Gross, George Grover, Royal V. Heath, Charles Hoadley, L. D. Holmes, G. D. Hurst, Albert Karlsson, G. H. Klein, E. A. Maynard, Dr. Laurence F. Rainsford, Miss Gwynne Richards, John M. Sheridan, Henry Thurston, Ernest Weidhaas, Ernest H. Wilson, Stephen Varni, etc., were all conspicious by their absence. Could it be possible they were of the impression Forest of Dean Mine was out of the United States, or was it a noble sacrifice on their part to stay away so as to give others a chance to collect specimens?

Fred W. Schmeltz had his plans well arranged and functioning so smoothly that everything went off without a hitch.

A fool for luck! In dodging a missile thrown at him bv Miss McAdie, Peter Zodac lost his balance, slipped to the ground and on arising came up with a specimen in his hand. The specimen contained gemmy apatite grains in four colors with green augite.

H. Alban Anderson, who has the largest private mineral collection in Peekskill and who has explored the Forest of Dean Mine many times in the past, was one of those who enjoyed Miss McAdie's luncheon before the homeward journey. He remarked that Miss McAdie's pie was more satisfying than any specimen he had ever found at the Forest of Dean.

We were pleased to greet Mrs. F. H. DeRemer and Miss Litta L. Voelchert. In noting their lack of hammers and other accessories for a mineral trip they explained they were collecting friends instead of minerals, thinking that friends were of more value than mineral specimens.

We wish collectors who may have found specimens other than what are listed on page 84, would send in a report on them by Oct. 20th at the latest. Please send in full information on each mineral.

The list will be revised and reprinted in the December issue and we hope it will prove to be the most complete ever printed on the minerals of the Forest of Dean Mine.

When the work of the day was over, our good byes said to the last few friends as they left for their homes in some distant city, and we turned toward the car—half with joy and half with regret—then it was that a most agreeable and very delightful surprise was presented us. For Miss McAdie had set out for us tired and hungry mortals a repast as dainty as she is charming, and as we nestled back comfortably against some friendly bushes, with a glass of ice-cold lemonade in one hand and a big piece of delicious homemade pie in the other, we closed our eyes and murmured, "Ah, this is the end of a perfect day!"

Bibliographical Notes

The Crystal Cavities of the New Jersey Zeolite Region: By Waldemar T. Schaller —90 pages, 32 plates, 33 figures, 1 insert.

Mineral collectors should welcome with joy Dr. Schaller's very fine report covering investigations of cavities which occur so numerously in many of the minerals found in the zeolite region and which have long excited their interest. Many of these cavities are regular, bounded by plane surfaces, and have the shape of crystals. It is obvious that they represent spaces once occupied by minerals long since removed and many mineralogists have speculated about the identity of these minerals. The author, who has had access to much excellent material, feels it is now possible in large measure to solve this problem.

A copy of this excellent and very interesting report should be in the library of every collector and especially of that collector who has a representative series of fine minerals from the world-famous zeolite localities of New Jersey.

The report is issued by the U. S. Geological Survey as Bulletin 832. Copies may be secured from the Superintendent of Documents, Washington, D. C., at 45c each.

Mineralogy of Drill Cores from the Potash Field of New Mexico and Texas: By Waldemar T. Schaller and Edward P. Henderson—124 pages, 39 plates, 18 figures.

The material described in this report was obtained from drill cores and well cuttings which were shipped to Washington, D. C., for examination and chemical analysis of their potash content. A large number of minerals have been identified from these cores and cuttings and six of them—kainite, kieserite, langbeinite, leonite, lueneburgite, and polyhalite—were first recorded in the United States from this field.

Issued by the U. S. Geological Survey as Bulletin 833. Copies may be obtained at 60c each from the Superintendent of Documents, Washington, D. C.

Sands, Clays and Minerals: Our readers should hail with delight the announcement that a new untechnical magazine on minerals has just made its initial appearance under the attractive name of *Sands, Clays and Minerals*. The magazine is devoted chiefly to economic minerals and is published in England by one of our advertisers, Mr. Algernon Lewin Curtis. N. E. Cutting is the Editor.

In its first number, issued in April, 1932, the contents are as follows: To Our Readers; Notes on Black Diamonds; Practical Sampling of Ores; Sands in British Industry; Slate; Manufacture of Portland Cement; Lithographic Abrasives; Precious Stones; A Simple Way to Analyze Clay; Economic Minerals (Actinolite); and Trade Marks of British Cements.

A number of interesting illustrations including one fine colored plate of an emerald feature the first number of 40 pages.

Our good wishes are extended the publisher and the editor that *Sands, Clays and Minerals* may enjoy a very long and happy life and that it may grow and prosper with each number.

The magazine will be issued quarterly and subscription price in United States is 5/6 (approximately $1.25). Its address is P. O. Box 61, Chatteris, England.

The Gemmologist: It is a pleasure to announce that the Gemmological Association (in England) have recently brought out *The Gemmologist* as their official organ. This little magazine is printing informative articles and written in an interesting manner on gems and precious stones and taking the May, 1932, issue as an example (Vol. 1, No. 10) its main article is "The Colour and Names of Gem Stones" by Dr. L. J. Spencer, F.R.S. Other articles are "The Diamond Trade of 1931," by Sydney B. Ball, Mining Geologist; "Latest Methods of Crystal Analysis," by A. T. J. Dollar; etc.

The Gemmologist is a monthly magazine of 40 pages and the subscription price is $1.00 a year. Published at 26-34 Old St., London, E.C.1, England. Its U. S. A. Agency is Geo. H. Marcher, 800 W. Sixth St., Los Angeles, Calif.

Hoba (South-West Africa), the Largest Known Meteorite: By L. J. Spencer, M.A., Sc.D., F.R.S., Keeper of Minerals in the British Museum—pages 1-18, 1 plate, 5 figures.

This South African monster, weighing 60 metric tons, is the largest meteorite known which has been discovered to date; a number of others greatly exceeding in size and weight the South African visitor from the sky are known but have not as yet been found.

The author has prepared a very interesting descriptive article covering his visit and examination of the meteorite in September, 1929. The meteorite lies on Farm Hoba, about 20 kilometers west of Grootfontein, in South West Africa, and was supposed to have been discovered around 1920.

The Meteorite Craters at Henbury, Central Australia: By A. R. Alderman, M.Sc., F.G.S., Lecturer in Geology and Mineralogy in the University of Adelaide. With a note by Dr. L. J. Spencer, F.R.S.—pages 19-32, 2 plates, 3 figures.

In the early part of 1931, public interest in South Australia was stimulated by the fall of the Karoonda meteorite on November 25, 1930, and its subsequent discovery by an Adelaide University party led by Prof. Kerr Grant. In consequence of this Prof. Grant was informed by private individuals that several crater-like depressions with fragments of meteoric iron surrounding them, were to be found near Henbury Cattle Station in Central Australia. The author was commissioned by the South Australian Museum to make a preliminary survey of the area. The result of the survey is interestingly described in this report with a note added by Dr. Spencer.

A New Pallasite from Alice Springs, Central Australia: By L. J. Spencer, M. A., Sc.D., F.R.S., Keeper of Minerals in the British Museum—pages 38-42. 1 plate, 1 sketch map.

This meteorite, weighing 1084-½ grams, was presented to the British Museum in November, 1931, by Dr. Herbert Basedow of Adelaide, South Australia, who found it in Central Australia in 1924 while leading the Vice-Regal Expedition. During his extensive explorations in Central and Northern Australia it had remained unpacked in Dr. Basedow's possession for some years. The fragment was found lying on the surface and only partly buried in loose ferruginous sand. No doubt other pieces of this meteorite remains to be found in the district.

The above three very interesting papers are reprinted from the *Mineralogical Magazine*, March, 1932, Vol. XXIII, No. 136, published by Mr. Humphrey Milford, Oxford University Press, Amen House, Warwick Square, London, E.C.4, England.

Fortieth Annual Report of the Ontario Department of Mines: Vol. XL, Part IV, 1931—129 pages, 49 illust., 26 sketch maps, diagrams and sections, 2 colored geological maps.

The report is divided into four sections:—Goudreau and Michipicoten Gold Areas, District of Algoma, by E. S. Moore (1-54); Kowkash-Ogoki Gold Area, District of Thunder Bay, by L. F. Kindle (55-104); A Deposit of Titaniferous Magnetite in Angus Township, District of Nipissing, by M. E. Hurst (105-110); and Chromite Deposits of the Obonga Lake Area, District of Thunder Bay, by M. E. Hurst (111-119).

Issued by Ontario Department of Mines, Toronto, Canada.

Annual Report of the Minister of Mines of the Province of British Columbia for the Year Ended 31st December, 1931:—254 pages, 28 photos, 6 plans.

The gross value of the mineral production of British Columbia in 1931 was $34,883,181, a decrease of $20,508,812 or 37 per cent as compared with the figure of $55,391,993 in 1930. This heavy decline in value was mainly caused by much lower metal prices and lowered outputs of metals.

Issued by Minister of Mines, Victoria, B. C., Canada.

THE ROCKS AND MINERALS ASSOCIATION

PEEKSKILL, N. Y., U. S. A.

Organized to stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not as yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Honorary President

Dr. Henry C. Dake, 793½ Thurman St., Portland, Ore.

Honorary Vice-Presidents

Dr. W. F. Foshag, Curator, U. S. National Museum, Washington, D. C.

Dr. L. J. Spencer, Keeper of Minerals, British Museum, London, England.

Dr. Bertha C. Cady, Girl Scouts, Inc., 670 Lexington Ave., New York, N. Y.

Charles W. Hoadley, 145 Willow St., Brooklyn, N. Y.

Morrell G. Biernbaum, 17 Glencoe Road, Upper Darby, Penn.

Gilbert Hart, St. Edwards University, Austin, Texas.

Noyes B. Livingston, 1605 Virginia Place, Fort Worth, Texas.

Benjamin T. Diamond, M. A., 2020 E. 41st St., Brooklyn, N. Y.

M. Mawby, 330 Chloride St., Broken Hill, N. S. W., Australia.

Edward Cahen, Birds Fountain, Dunsford, Exeter, Devonshire, England.

Secretary-Treasurer

Peter Zodac, Peekskill, N. Y.

Club and Society Notes

Geological and Mineralogical Section of the Buffalo Museum of Science

On June 15th, 1932, at the home of Dr. Richard F. Morgan of the University of Buffalo, was formed the Geological and Mineralogical Section of the Buffalo Museum of Science to study the crust of the earth and minerals and rocks of Western New York in general and Erie County in particular. The officers elected for the ensuing year are:

President: Dr. Richard F. Morgan.
Vice-President; N. Stanley Snyder.
Secretary: Miss Cheryl Cowen.
Treasurer: Dr. I. L. Scrubbs.
Chairman of Executive Committee: Dr. Joseph Mols.

The second meeting of the club will be held in September.

The official address of the club is in care of the Buffalo Museum of Science, Humboldt Park, Buffalo, N. Y.

Milwaukee Geological Society

The Milwaukee Geological Society was organized on May 25, 1932, by eight keenly interested geologists and mineralogists under the leadership of Ben Bagrowski. The first meeting was held in the Trustees' Room at the Milwaukee Public Museum and the following officers were elected for the ensuing year:

President: Ben Bagrowski.

Vice-Pres. and Secretary: Wesley Long.

Treasurer: Stanley Wisniewski.

The second meeting was held on June 15th with 14 members present. Business matters relative to future meetings, field trips, dues and other items of importance were discussed. The members voted to hold their third meeting in September.

The official address of the Society is 1722 S. 22nd St., Milwaukee, Wis.

President's Page

(DR. H. C. DAKE, President. Rocks and Minerals Association.)

MINERALOGICAL TALKS TO THE SCHOOL CHILDREN

Probably few collectors of minerals and students of mineralogy realize the importance of informing the school children on the subject of minerals. Mineralogy is an important branch of Natural history, a subject taught to the children in practically all the modern elementary schools. As adults, many of us do not realize the changes which have taken place, in the methods of teaching, in our public school system since we were pupils.

Many of our elementary schools, especially those in the cities, follow what is known as the "platoon" system of teaching and under this system, one or more teachers and rooms in the school are set aside for the purpose of Nature study, which includes the study of rocks and minerals. The children are permitted and urged to bring to the schools for identification and study purposes any rock, mineral, flower, plant, shell, leaf, insect or any other Natural history material which they may observe and not know. With this in mind the magnitude of the task confronting the teacher can be readily appreciated. All material which is of sufficient interest is kept and as a result, largely through the efforts of the children, some of the schools have many thousands of specimens of Natural history on display.

The "Nature Study" teachers (as they are called by the children) in our public schools are very well versed in a general way in the many branches of Natural Science, which they are called upon to have a knowledge of. However, no one individual can be expected to be a specialist in every branch of Nature study, therefore any assistance given to the teachers by mineralogists will be helpful and appreciated. It is therefore urged that the mineral collectors take upon themselves the task of calling upon the teachers in their local schools, and giving them any assistance which they may need in the teaching of mineralogy to the children, and in the identification of mineral specimens in the school collections. Further, most collectors have duplicate material on hand, which they cannot use and which is often suitable for study purposes and can be donated to the school collections.

The writer has had the pleasure of giving the children of the local schools, talks about minerals in which the children display a keen interest. To make a talk of this kind interesting and to help illustrate same, a number of specimens can be taken, which the children are permitted to see and handle. Many interesting things can be told the children regarding minerals. Boys are especially eager to learn about the metallic minerals while the girls are naturally most interested in the gem minerals. A large "lucky" lodestone specimen with an assortment of metallic objects attached and with an explanation of the theory that the material gained its polarity by the deposit being struck by lightning, will never fail to hold the breathless interest of the children.

We recently visited the Flagg Science Museum at Scarsdale, N. Y. (9 Windmill Lane), which is conducted by a small group of boys who are keenly interested in nature in general and minerals in particular. Not only have the youngsters a very fine display of specimens and all accurately labeled but they issue "**The Informer,**" a little mimeographed magazine which comes out monthly. We especially desire to commend the May issue as in this number 23 Scarsdale minerals were listed and described. This is the first notice ever brought to our attention where a group of boys have printed a list of minerals occuring in their city. We wish boys in other cities could follow the example of our young friends in Scarsdale.

Membership Department

New Members Enrolled—April 20, 1932—July 20, 1932.

THE HONOR ROLL FOR 1932

New Members Secured Since January 1st, by:

E. H. Cienkowski, Philadelphia, Penn.	15
The Gem Shop, Helena, Montana	10
Ward's Natural Science Est., Rochester, N. Y.	6
Boodle Lane, Galena, Kansas	6

ARIZONA

Congress Junction—Fory, Gordon.

CALIFORNIA

Adelaide—Thompson, C. C.
Arcadia—Candee, C. C.
Azusa—Smith, Thos. A.
Bakersfield—Baker, Jim.
East Pasadena—Polzel, E. O.
Fellows—Stevens, John B.
Long Beach—Bryant, E. S.
Los Angeles—Lawler, Ross
Prior, R. D.
Stager, Miss Lucile
Needles—McCorkle, John C.
Norwalk—Excelsior Union High School
Pasadena—Snyder, Miss Dorothy
San Dimas—Mann, Robert E.
Santa Monica—Jensen, Dr. H. O.
Upland—Randall, H. F.
Van Nuys—Halsey, Herbert
Whittier—Hockman, A. B.

COLORADO

Colorado Springs—Ward, Wayne W.
Kit Carson—Cunningham, L. S.

CONNECTICUT

New Haven—Baker, Donald L.
Winsted—Moffatt, Edw. E.

DISTRICT OF COLUMBIA

Washington—Schallere, Dr. Waldemar

IDAHO

American Falls—Brown, DeWitt

ILLINOIS

Champaign—Ruyle, Dr. J. B.
Chicago—Martin, Lewis E.
Museum of Science and Industry
Weis, Edward F.
Evanston—Banning, Mr. and Mrs. T. A.
Oak Park—Fahrney, Emery Homer
Riverton—White, Mrs. L. O.
Shumway—Bieber, Rev. M.

INDIANA

Indianapolis—Hanna, Mrs. Hugh H.

IOWA

Davenport—Fries, H. Earl
Des Moines—Luthe, F. H.
Dubuque—Estabrooks, Henry B.

KANSAS

Lawrence—University of Kansas
Ottawa—Carpenter, A. C.

MARYLAND

Chevy Chase—McBurney, John T.
Hagerstown—Shinham, O. J.

MASSACHUSETTS

Boston—Boston Society of Nat. Hist.
Brookfield—Phelps, Mason M.
Lawrence—Cunliffe, Miss Bee
Southboro—Thacher, Henry C., Jr.

MICHIGAN

Iron River—Byers, I. W.
Ludington—Loppenthien, Dr. J. W.
Monroe—McBride, Melville M.

MINNESOTA

Oak Terrace—Muir, John M.

MISSOURI

Liberal—Wimmer, J. P.
Webster Groves—Muther, Dan D.

MONTANA

Butte—Lehwaldeer, Philip H.
Smith, J. Osborn
Roundup—Bunker, Ralph L.

NEVADA

Tonopah—Boak, C. C.

NEW JERSEY

Bloomfield—Slater, A. J.
Camden—Clement, Curtis H.
Merchantville—Gudehus, E. R.
Orange—Broidrick, Thomas J., Jr.
Trenton—Sweeney, J. P.
Upper Montclair—Fifield, Ernest G.
Weehawken—Schack, Paul A.
West Caldwell—Henderson, Jos. J.

NEW MEXICO

Santa Fe—Miller, Walter
Springer—Hubbard, Bert

NEW YORK

Brooklyn—Rosenfeld, Herbert T.
Cen. Sq.—Shepherd, Rev. and Mrs. G. F.
Jamaica—Cypra, Anthony
Manhasset—Arnold, Ernest
Merrick—Soucek, Miss J.
Montrose—Thurston, Henry
Newark Valley—Knappe, Clarence L.
Otego—Sheldon, William H.
Ozone Park—DeRemer, Mrs. F. H.
Peekskill—Gardineer, Charles F., Jr.
McAdie, Miss Muriel J.
Port Washington—Crampton, Miss E. A.

NORTH CAROLINA

Charlotte—Barret, Dr. Harvey P.
Spruce Pine—Turbyfill, A. R.

OHIO

Canton—Lacey, Miss Mifton H.
Cleveland—Hanchette, Dwight N.
Toledo—Zimmer, Paul

OKLAHOMA

Shawnee—Kurtz, J. Geo.

OREGON

Lakeview—Lyon, Dr. J. L.

PENNSYLVANIA

Conshohocken—Sadler, Francis M.
Freeland—Shrader, John J.
Philadelphia—Burns, Jack B.
Conine, Lewis A.
Dahlke, Charles
Frank, Jack G.
Godfrey, Jonathan
Gold, Albert
Graff, Bertram P.
Grierson, William L.
Horwath, John A.
Hyman, Irving
Kreutzer, Edward A.
Laub, Thomas A.
Lewis, George E.
Marcelis, Stanley
Otto, Herbert
Schlesman, William

RHODE ISLAND

Providence—Blanchard, Avila

TEXAS

Laredo—Shiner, G. H.

UTAH

Salt Lake City—Jensen, V. C.

VERMONT

Springfield—Slade, H. Harold

VIRGINIA

Newport News—Barclay. George C.

WASHINGTON

Klickitat—Jensen, H. F.

WISCONSIN

Madison—Hocking, Chas. H.
Racine—Jackson, Melvin F.
Wiegand, Phil H.

WYOMING

Lander—Foster, C. B.

ALASKA

Anchorage—Scott, T. N.

HAWAII

Honolulu—Palmer, Harold S.
Wooddell, A. H.

PORTO RICO

Ponce—Valdecilla Grau, R.

SOUTH AMERICA

COLOMBIA

Medellin—Escuela Nacional de Minas

EUROPE

GERMANY

Cologne—Riester, W.

SCOTLAND

Edinburgh—Thin, James

AFRICA

NORTHERN RHODESIA

Nchanga—Truter, F. C.

MINERAL LOCALITIES INFORMATION DEPARTMENT

Members desiring information regarding minerals or mineral localities in the following states may obtain it by writing to the Collectors listed and enclosing a self-addressed stamped envelope.

Oregon, Southern Idaho, Northern Nevada	Dr. Henry C. Dake, 793½ Thurman Street, Portland, Ore.
The Oregon Coast, South and Western Oregon, Northern California, Southern Washington	John M. Tracy, 601 Orange Street, Portland, Ore.
Petrological Information in Central Eastern Iowa	Prof. Wm. J. H. Knappe, Curator, Wartburg College Museum, Clinton, Iowa.
Massachusetts	Edward C. Foster, 1 Kingsley Ave., Haydenville, Mass.
Pacific Southwest, especially Southern and Central California	Edwin V. Van Amringe, Department of Geology, Pasadena Junior College. Pasadena, Calif.
Western Connecticut	Wilbur J. Elwell, R. F. D. No. 4. Box 18, Danbury, Conn.
Southeastern Section of United States and particularly Alabama	Dr. R. S. Poor, Head Dept. of Geology, Birmingham-Southern College, Birmingham, Alabama.
The Anthracite Region of Pennsylvania and especially the Eastern Middle Field	John J. Shrader, 184 Alvin St., Freeland, Pennsylvania.

COMMENT AND CRITICISM

Mr. Peter Zodac, Secretary,
Rocks and Minerals Association,
Peekskill, N. Y.
Dear Sir:—

The Council of the Mineralogical Society of America directs me to invite the Rocks and Minerals Association to be the guests of our Society at the annual meeting December 28 and 29, 1932, at Harvard University, Cambridge Massachusetts. On December 30 you may have our room and equipment for a meeting of your own if you so desire. This invitation also meets with the approval and cooperation of the Local Committee at Harvard University. In case your members wish railroad certificates they may apply to me in December for them.

Yours truly,
FRANK R. VAN HORN,
Secretary.

Case School of Applied Science,
May 12th, 1932. Cleveland, Ohio.

We are grateful to the Mineralogical Society of America for the very cordial invitation extended us to be their guests at the annual meeting and we hope a goodly number of our members may be present. Those planning to attend are urged to so advise the Secretary of the Rocks and Minerals Association, Peekskill, N. Y., and be registered.

Rocks and Minerals Ass'n.,
Peekskill, N. Y.
Gentlemen:

The Milwaukee Geological Society wishes to send in a letter of gratitude for the kind cooperation extended in assisting us to organize our new Club. The Society pledges itself to cooperate thoroughly with the Association, as far as possible, in any undertaking.

Respectfully submitted,
Benedict Peter Bagrowski,
June 16, 1932. President.